DESIGNING FOR TRANSFORMATION

Toolkit

A Practice-Oriented Toolkit for Mainstreaming Transformational Change in Program and Project Preparation Processes

ADB

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This is the first effort to put into practice the concepts and findings of the CIF's Transformational Change Learning Partnership (TCLP). Since 2017, the TCLP has convened a wide array of stakeholders in the climate finance community to understand, define, evaluate and advance the concept of transformational change (TrC). It is expected that this document will help mainstream the concepts and insights of TrC into the tools, methods, and approaches that Multilateral Development Banks use in their day-to-day project and program preparation processes.

Target audience: Project and program designers and their consultancy teams at Multilateral Development Banks, especially those who are responsible for preparing projects and programs funded through the Climate Investment Funds (CIF) and other donors seeking to deliver transformational change (or paradigm shift).

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EXECUTIVE SUMMARY

Recent years have seen the rise of transformational change (TrC) as a cross-cutting priority theme embraced by the climate finance community. The working definition used by the Climate Investment Funds (CIF) for TrC is: ***strategic interventions that accelerate or shift development trajectories towards a low-carbon and climate-resilient future***. As this concept continues to take hold, the need has emerged to provide guidance on how to operationalize TrC and use it to improve the design of climate investments.

In response, the Asian Development Bank (ADB) and the IDB Group, comprised of the Inter-American Development Bank, IDB invest, and IDB Lab, with the support from the CIF, commissioned the development of "Designing for transformation". This to document is meant to guide project and program leaders in the practice of designing investments more likely to deliver TrC. It has been structured as a toolkit, with concise guiding materials that help introduce TrC concepts and reflections into the tools, methods, and approaches that Multilateral Development Banks (MDBs) use in their day-to-day project and program preparation.

The set of materials contained in this toolkit includes a summary of two general frameworks, ten TMA guiding sheets, and eight case studies to discuss real-world examples of how transformational change can inform project design, as described below:

- **A summary of two cross-cutting frameworks** in Module 2, seeks to help designers articulate general ideas around what constitutes a transformative climate investment. The first framework contains the definition and analytical structure of "transformational change" as developed by the Climate Investment Funds' (CIF) Evaluation and Learning Initiative (E&L). The second framework describes the multi-level perspective (MLP) as an approach to help systematically assess whether the enabling conditions for transformation exist, and what tactics might be the most promising to deliver it.
- **Ten guiding sheets,** also in Module 2, contain a description of existing Tools, Methods and Approaches (TMAs) frequently used by MDBs; through case study analysis (see below) these ten TMAs were observed[1] to have an important role in gearing design towards characteristics associated to TrC. Their guiding sheets establish a common understanding around which activities/analyses each TMA entails, and provides reflections, recommendations and examples on how to design the application of these TMA in a way that can help strengthen an investment's potential for TrC.
- **Eight case studies** in Module 3, exemplify emerging characteristics of TrC and deliver good practice in the use of different TMAs; in some cases, they also illustrate shortcomings that should be avoided in the future. These cases were selected to reflect the diversity of climate investments in MDB portfolios: they touch upon clean energy and renewable energy deployment, sustainable forest management and climate resilience; they cover public and private investments in both Asia and Latin America. The eight case studies use the frameworks mentioned above, and offer context to the reflections contained in TMA guiding sheets.

The guidance contained in these materials incorporates insights from MDB practitioners, who were asked to reflect on ways to mainstream the concepts of TrC in their everyday practice. The reader should bear in mind that TrC has been given a working definition until very recently, through pioneering work by the CIF's Transformational Change Learning Partnership (TCLP). Therefore, this toolkit is an early first step towards connecting this emerging concept with on-the-ground practical operations, and will probably continue to be refined as TrC is consolidated in the field of climate finance.

How can designers prepare climate investments that are more likely to deliver transformational change? The "Designing for Transformation Toolkit" presents practitioners with a set of suggested concepts, guiding questions and examples to help strive towards this objective.

[1] This capacity was determined mainly through case study analysis. The process to select which TMAs to include is described in a separate report, available upon request.

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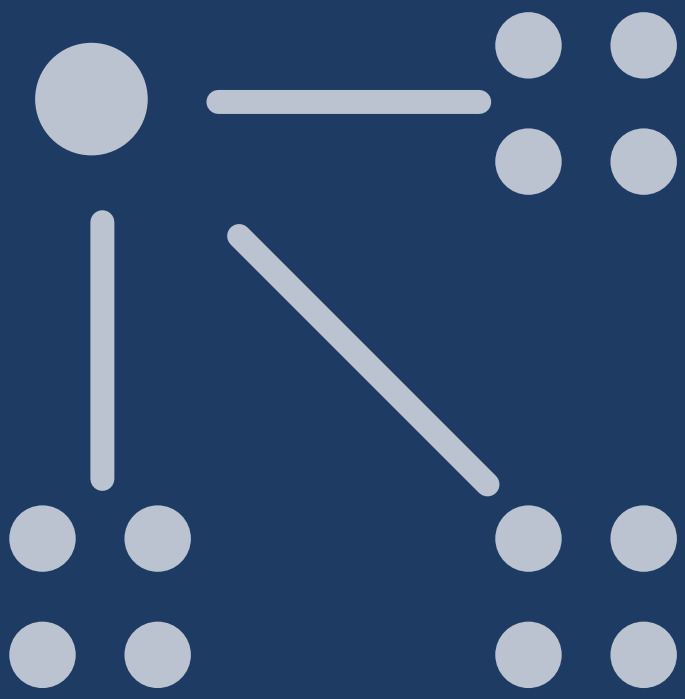
Module 1: An Introduction to the Toolkit



As mentioned above (see: Executive Summary), this toolkit responds to the emerging need of providing guidance on how to operationalize the concept of transformational change (TrC) and use it to design climate investments with greater likelihood of delivering transformational outcomes. To this end, this toolkit is composed of three modules:

Module 1: An introduction to the toolkit. This module offers an overview of materials. It describes the objectives and composition of the toolkit. It also summarizes some of the key questions and reflections that emerge from all supporting analytical work on transformational change. Therefore, *if you are short on time, we advise you read all of module 1 and then skim through modules 2 and 3 as needed*.

Module 2: Guiding Sheets for project and program designers (set of 2 and set of 10)

Two guiding sheets contain cross-cutting frameworks that will help designers articulate general ideas around TrC. The first sheet contains the concepts of transformational change as developed by the Climate Investment Funds' (CIF) Evaluation and Learning Initiative (E&L) through the Transformational Change Learning Partnership (TCLP). The second sheet describes the multi-level perspective (MLP), as a framework to help analyze enabling conditions for TrC and the role of climate investments in facilitating transformation.

Ten sheets cover guidance given for TMAs that will aid designers in fleshing out key questions around TrC during specific project and program preparation activities. Some sheets refer to TMAs and activities that are relevant at the earlier stages of design, for example: the creation of a theory of change and the use of a programmatic approach to articulate different climate investments. Some others will be more useful in later stages, when greater project-definition is needed; for example: when performing feasibility studies and economic analyses for specific projects.

Each sheet provides reflections, recommendations and examples on how to tailor these analyses to increase an investment's potential to be transformational. These ten TMAs were selected based on their role and capacity to instill transformational features into projects and programs[2], and their complementarity in doing so.

[2] This capacity was determined mainly through case study analysis. The process to select which tools, methods and approaches (TMAs) is described in a methodological report that is available upon request.

Module 3: Case Studies (Set of 8)

Indonesia CTF	Bolivia PPCR
Lao PDR FIP	Colombia CTF
Maldives SREP	Honduras SREP
Tajikistan PPCR	Mexico CTF

Eight case studies capture the analysis of current climate investments that contain design features that can be useful to exemplify characteristics potentially associated to transformational change. The projects and programs that were studied target energy-related CO_2 emissions, sustainable forest management and climate resilience; they cover public and private investments in both Asia and Latin America.

Each case study summarizes three main elements: 1) the objectives and achievements of the project or program; 2) the aspects of their design that were judged to be possible examples of characteristics aligned with transformational change; 3) the main lessons learned applicable to a use of TMAs that are better geared towards delivering transformational outcomes. Thus, these case studies offer additional context to understand the design elements with TrC potential referred to in each TMA contained in Module 2.

The combination of these general guiding sheets, and concrete examples offered in case studies, seeks to provide a practical approximation to the concept of transformational change. They hinge on design features that have worked well in delivering climate solutions that are *relevant*, that can aim for *systemic change*, that have potential to *scale-up* and can prove to be *sustainable* in time. In short, that are more likely to be *transformational*.

The toolkit has been built upon insights shared by 60 interviewees including project designers, implementers, government officials, private enterprises, beneficiaries and additional stakeholders. It entailed four site visits, two workshops, documentation and literature review, and the identification of over 20 TMAs currently used by ADB and IDBG[3].

Note: Although this toolkit has been built through an assessment of projects and programs funded by the Climate Investment Funds (CIF) and channeled through Multilateral Development Banks (MDB), its conclusions can be applicable to a wider audience aiming at, for example, paradigm shift.

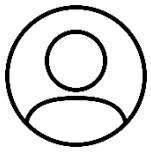
[3] For further detail on the methodology, a methodological report is available upon request.

OBJECTIVES AND INTENDED USERS OF THIS TOOLKIT

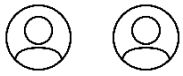
The main purpose of this toolkit is to provide guidance to project and program designers in the use of existing MDB tools, methods and approaches (TMAs), in a way that allows them to design climate investments that are better geared towards generating transformational changes in favor of a low-carbon, resilient development.

This toolkit is not meant to offer a prescriptive step-by-step guide on how to use different TMAs; it is assumed that designers routinely apply these TMA in a tailored fashion, according to their needs. Rather, this toolkit seeks to provide recommendations on the sorts of aspects within these TMAs that should be reflected upon, key questions to ask and possible strategies to follow, to help improve their effectiveness in supporting TrC.

This toolkit with two main audiences in mind:



Primary users: Practitioners involved in the design of programs and projects targeting mitigation and adaptation to climate change. This includes: project leads and investment officers for both the public and private sectors within MDBs; donors with a role in the design of project and program requirements and objectives; consultants or any third party hired to carry out analyses for project and program design; as well as national governments and private sector enterprises in charge of designing and implementing climate solutions seeking to catalyze TrC.



Secondary users: The wider climate finance community, including designers and evaluators from the CIF; the Global Environmental Facility (GEF); the Green Climate Funds (GCF); development finance institutions; commercial finance entities; universities and knowledge-based institutions with a focus on climate change; and any other partner organizations involved in climate change initiatives.

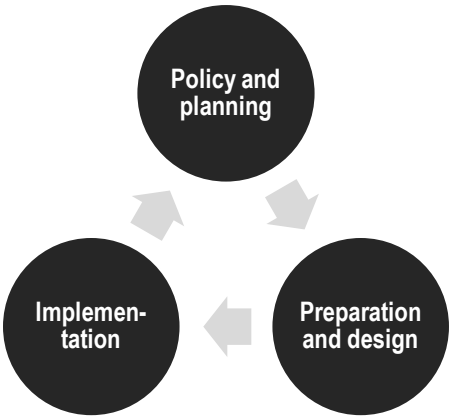
Note: The practitioners that can most directly benefit from the present toolkit are those within MDBs that are collaborating with the CIF, since these funds already operate based on the concepts of TrC here utilized, and often use several of the TMAs addressed in this toolkit. The core definition of TrC and concepts used for its operationalization were developed and are being strengthened through the CIF Evaluation & Learning Initiative, which has supported the development of this toolkit.

KEY MOMENTS FOR THE USE OF THIS TOOLKIT

The recommendations in this toolkit have been designed to be applicable to tools, methods and approaches (TMAs) used in all three different degrees of investment[4] aggregation: 1) overarching *country strategies* including multiple projects and programs; 2) *programs* (interventions that include two or more sub-projects, which can be simultaneous or consecutive), and 3) *projects* (a single, self-contained intervention which can be independent or part of a larger strategy).

Different TMAs may be more relevant at one stage or another: while the *programmatic approach* lies at the heart of investment plans and the *principles of blended finance* can be critical to implement multi-layered, ambitious country strategies, programs may benefit more from tools like a *market analysis* and a *theory of change*, which can be more supportive of a sector-specific set of interventions. Similarly, projects can find more useful an *economic analysis* or a *feasibility study,* which are capable of verifying that a specific intervention is both technically feasible and economically sound, representing the best use of concessional finance compared to other possible interventions[5]. Nonetheless, many of these TMAs can be adapted to address needs that are specific to different degrees of climate investment aggregations.

The toolkit can also be useful at different stages of a project or program's life cycle[6]:



Policy and planning stage: Also referred to as "upstream" activities, it is the moment in which designers participate in country partnerships and regional cooperation activities, review the legislation, laws, regulations, market conditions, stakeholder interests, to identify whether a proposed solution has priority and pre-feasibility to advance towards preparation. At this point, the toolkit can help practitioners conceptualize climate investments capable of addressing critical barriers, working with constraints, and leveraging opportunities present in the prevailing conditions. The toolkit (and in particular, its two cross-cutting frameworks) can help raise important questions to identify where to concentrate efforts, who to bring to the table, and how to combine different interventions to promote synergies that increase the transformational potential of the strategy as a whole.

Project preparation and design stage: This moment entails the fine-tuning of the solution through the definition of the technical configuration for the alternative, the revenue streams, the allocation of risk, the performance on environmental and social grounds, and the design of implementation arrangements. In sum, it sets the investment up for its approval by Committees. At this point the toolkit (and in particular, its ten TMAs) can help select the type of analysis needed to a) fully understand the problem being tackled and define the transformational outcomes the investment will pursue, b) develop a

[4] "Investments" refers to both projects and programs designed by MDBs, whether public or private, which in the context of the CIF tend to be included within a larger country-led investment plan.

[5] This is not to say that certain TMAs only work at one degree or another: most of them can operate across them, but their comparative strengths may be more significant at one in particular, or the way in which they ought to be applied may vary from one category to another.

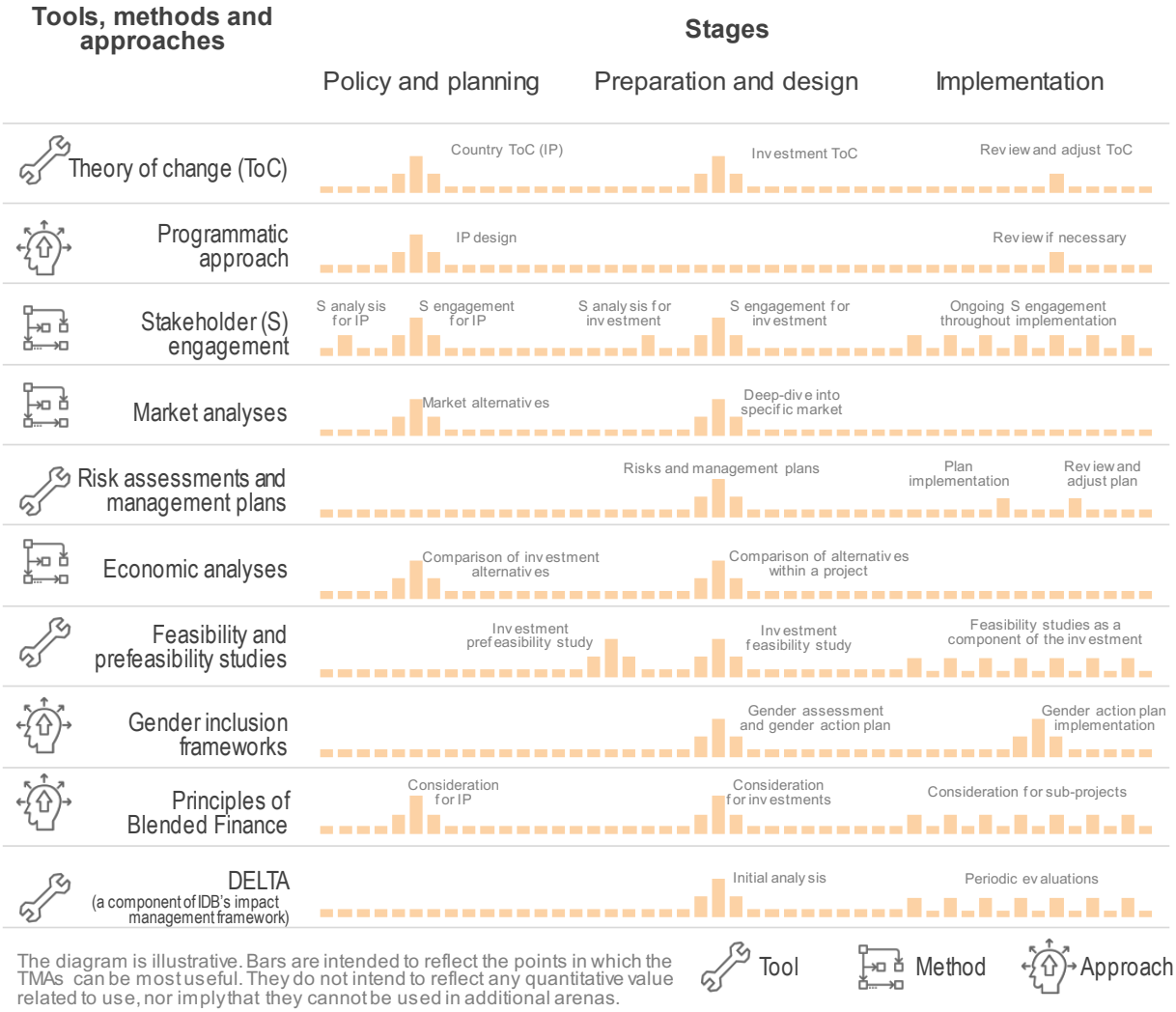
[6] Stages were crafted using as a reference work from: ADB (2019), IDB Group (2018) and Serebrisky, T. et.al. (2018).

strategy and rationale to reach those outcomes, and c) analyze the economic, technical, social and environmental performance and impacts of the proposed investment with TrC dynamics in mind.

Implementation stage: Involves the moments for periodic monitoring of the activities and outcomes, including the supervision of disbursement, financial management, procurement procedures, risk management, and/or safeguards compliance policy. At this point, the toolkit can be utilized to mainstream TrC considerations into very specific analyses required to get a grasp of a particular component of the investment, and to update other analyses that will help implementers keep TrC dynamics on the radar (e.g. risk studies and risk management plans) and adapt to change.

The following Figure reflects the tools, methods and approaches that can be more useful for practitioners at each stage of the project or program's life cycle:

Figure 1 Main stages in which the use of TMAs included in this toolkit are most relevant



MODULE 2 AT A GLANCE: GUIDING SHEETS

Module 2 contains a set of twelve "Guiding Sheets", of four pages each. The first two Guiding Sheets are a summary of the conceptual and analytical frameworks used across the analysis: transformational change (TrC) and the multi-level perspective (MLP). The last ten Guiding Sheets provide TrC-based and MLP-informed recommendations for each tool, method and approach (TMA) included in the toolkit.

The TrC and the MLP frameworks provide analytical concepts used in modules 2 and 3:

- The Guiding Sheet on the transformational change (TrC) framework is based on materials developed by the CIF TCLP to inform the understanding of how TrC is conceptualized and updated in the context of the CIF. It includes the working definition of TrC and its four dimensions (relevance, systemic change, scale and sustainability) and is accompanied by other conceptual elements that deepen understanding on the subject (nine arenas of intervention, the theory of transformational change and seven working hypotheses). All these concepts are the outcome of two years of intense multi-stakeholder work and consensus-building efforts among institutions working with the CIF.[7]

- The Guiding Sheet on the multi-level perspective (MLP) explains the main elements of a framework used by scholars to describe fundamental shifts in social and technical systems (see: Geels, 2002). MLP helps systematically assess the potential for transformation by considering dynamic, non-linear macro-processes happening at three distinct levels: landscape (the exogenous factors), socio-technical regimes (the technologies and practices that are well established in the status quo) and niches (protected spaces where innovation occurs). Transformation, or the process of shifting from one regime to another, can be supported by a set of *tactics,* which project and program designers can leverage in order to make TrC more likely[8].

These two frameworks are then followed by a set of ten *TMA Guiding Sheets*, which lie at the center of project and program design and are the focus of this toolkit. The ten TMAs included in the toolkit were selected based on their capacity to instill transformational features into projects and programs[9], and their complementarity in doing so.

[7] Detailed information on both the conceptual framework and its application to evaluate concrete projects and programs can be found in the reports carried out and commissioned by the CIF Evaluation & Learning Initiative. See: Bird, N. et. al. (2019) *Transformational change in the Climate Investment Funds. A synthesis of the evidence. ODI Report for the TCLP*. London, United Kingdom, 80 pp.; and Itad (2019). *Evaluation of Transformational Change in the Climate Investment Funds*. Final Evaluation Report. Elaborated in association with Ross Strategic & ICF. East Sussex, United Kingdom, 72 pp.

[8] For more information on the MLP, as well as detailed explanations of how it relates to TrC, and how it is applied to analyze two case studies, a methodological report is available upon request.

[9] This capacity was determined through case study analysis. The process to select TMAs was structured around three steps: 1. Identification: Done through two methods: a) explicitly mentioned by interviewees, or b) a clear linkage between the features mentioned by stakeholders as being potentially transformational, and the information reflected in the TMA. 2. Analysis: TMAs were analyzed to determine their level of contribution to each of the dimensions of TrC,. 3. Selection: the TMAs that more consistently showed relations to transformational change and its dimensions were selected as part of the core toolkit and verified with participating MDBs through a workshop-based consultation. As a product of this consultation, gender frameworks, principles of blended finance and the DELTA tool (as part of the development effectiveness framework used by IDB Invest) were added in the toolkit. More detail is provided in the full methodological report, which is available upon request.

The ten TMA- Guiding Sheets of Module 2, along with some of the key TrC-related questions they can help answer, are as follows:

1. **Theory of change**: How to define a vision for transformation and its supporting rationale? How to ensure program and project activities focus on the main barriers towards shifting a system? How to identify contextual dynamics that might endanger the validity of key assumptions?
2. **Programmatic approach**: How to ensure an investment strategy is encompassing enough to successfully deal with the multiple levels and barriers towards system's change? Which existing partnerships and resources can be harnessed to the benefit of long-term sustainability? How can phasing help solidify a tactical approach to transformation?
3. **Stakeholder engagement**: Can the investment address concerns from all key players related to the systems and institutions it seeks to transform? How can it best generate stakeholder buy-in all throughout the investment's life cycle? Is strong stakeholder skepticism or opposition expected, and if so, how can it be managed to allow TrC?
4. **Market analyses**: How to ensure the investment tackles system-wide market gaps and failures? Do current regulations, user preferences and emerging products pose any threats to the investment? Are there market behaviors that will need to be addressed before a transformative climate solution is fully rolled out?
5. **Risk assessments and risk management plans**: What exogenous factors should be considered when designing for the long-term sustainability of the climate investment? How to map the external dynamics that have the greatest role in ensuring the investment achieves transformation?
6. **Economic analyses**: How to account for the investment's "transformational" value to society? What types of outcome metrics might be most useful to influence local mindsets and behaviors? How can a given investment show it outperforms alternatives, in terms of delivering sustainable and long-term transformation?
7. **Prefeasibility and feasibility studies**: How to corroborate that an investment offers a technically-sound and financially viable market-changer? What conditions are necessary for it to deliver the best TrC outcomes? How can implementation arrangements facilitate effective multi-level governance?
8. **Gender inclusion frameworks**: How can the gender-climate nexus open up spaces for transformation? Can the decision-making roles of women (and other underrepresented groups) be harnessed to shift development pathways towards a low-carbon, resilient future?
9. **Principles of blended finance**: What types of projects and contexts lend themselves better to the transformational use of public and donor funds, in combination with resources from the private sector? What performance should they target in order to promote market transformation?
10. **Development Effectiveness Learning Tracking and Assessment (DELTA) Tool**: Can existing platforms within Multilateral Development Banks' (MDBs) be harnessed to mainstream TrC considerations into their portfolio of climate investments? How can the systematic monitoring and evaluation of effectiveness boost the potential for future TrC?

TMA Guiding Sheets offer orientation on how each of their project and program preparation activities can help designers analyze complex dynamics that play a role in TrC, and apply lessons learned from previous experiences and analysis (see Module 3).

Why are TMA the focus of this toolkit? The use of TMAs in practice indicates that they are adaptable instruments that help structure analytical processes which can be powerful vehicles for steering investments towards TrC. They allow designers to a) gather critical inputs to better understand the dynamics they seek to transform; b) define the project or programs' rationale and the strategy that will be deployed to overcome a given problem; c) identify the viability and convenience of the proposed actions, preparing the investment for any challenges that could be faced along the way; and d) define the mechanisms that will be utilized to evaluate TrC potential and achievements, adjusting as necessary.

MODULE 3 AT A GLANCE: CASE STUDIES

Eight case studies provide textured analysis for this toolkit. These were selected in collaboration with MDBs, ensuring that both public and private sector investments were included, as well as investments under all four programs contained in the CIF: The Clean Technology Fund (CTF), the Pilot Program for Climate Resilience (PPCR), the Scaling-Up Renewable Energy Program in Low Income Countries (SREP), and the Forest Investment Program (FIP). In order to be considered for case study selection, an investment had to a) have enough time in implementation as to start to show signs of achieved or potential TrC, and b) be considered as promising in terms of TrC by the project lead in charge of the investment. The details on the process followed to select the case studies can be found in the full report behind this toolkit, available upon request.

Module 3 contains a four-pager of each case analyzed. Case studies describe the overall objective of the project, indicators, dynamics of transformation, TMAs utilized, and lessons learned, among others. They seek to provide a real-world example of concepts in the toolkit, and trigger a discussion on whether TrC has been effectively achieved.

The projects and programs analyzed, along with a key design question that each case study reflects upon, are as follows:

Asian Development Bank	IDB Group
CTF Indonesia Private Sector Program Private Sector Geothermal Energy Program *How can the programmatic approach be used to trigger action in high-risk high-reward TrC environments?*	**CTF Mexico Private Sector Project** Capital Markets Solution for Energy Efficiency Financing *How can a theory of change be informed by market analysis to ensure key barriers towards TrC are tackled?*
PPCR Tajikistan Public Sector Project Building Climate Resilience in the Pyanj River Basin *How can stakeholders at different levels be engaged to maximize ownership, and what role does this have in TrC?*	**CTF Colombia Public Sector Program** Technological Transformation Program for Bogota's Integrated Public Transport System *How can feasibility studies help shift mindsets towards the adoption of climate innovation, and is this a sufficient condition for TrC?*
SREP Maldives Public Sector Program Preparing Outer Islands for Sustainable Energy Development Program *How can market segmentation and targeted experimentation contribute to create an appetite for transformational climate investments?*	**PPCR Bolivia Private Sector Project** Financial Products to Promote Climate Change Resilience in Bolivia *When introducing a transformational product or service in a market, how should stakeholder engagement strengthen market analysis and feasibility studies?*
FIP Lao PDR Project Protecting Forest for Sustainable Ecosystem Services *Can stakeholder engagement be made part of a theory of change, and how does this relate to long-term sustainability and likelihood of scaling up a transformative action?*	**SREP Honduras Program** Honduras Self-Supply Renewable Energy Program *Should a climate intervention solely focus on building technical expertise and local knowledge, in the absence of larger enabling conditions for TrC?*

This toolkit is based on an in-depth analytical process that produced a series of key findings. The following ten questions seek to condense these findings, turning them into important reflections that practitioners should keep in mind during project and program design. They are intended to strengthen each of the four dimensions that, according to CIF, must be present to bring about transformational change in climate finance: relevance, systemic change, scale and sustainability (short definitions are provided below, and a more through explanation is available in Module 2).

Please note these questions are meant to be exploratory, rather than limitative, and that further detail on the case studies that exemplify them[10] can be found in Module 3.

Dimension: relevance

The strategic focus of a climate investment, impacting low-carbon & climate-resilient development, with sustainable co-benefits.

1. **To what extent are intended outcomes aligned to priorities in the host country?** Investments may increase the probability of being championed by local stakeholders and achieve TrC if they target and report on benefits and co-benefits that are salient to a country's development agenda. How can project design, especially through its final output and impact metrics, be strengthened to address this?

   For example, the case study on the Maldives' Scaling-Up Renewable Energy Program (SREP), found that even when the key indicator for measuring progress was the quantity of newly installed kW/h of renewable energy capacity, team leaders were deliberate about emphasizing how these metrics translated into impacts on *energy security* (e.g. reduction in diesel imports), a topic with strong inter-ministerial interest and support from the governmental counterpart.

2. **Are there ways to introduce flexibility in climate programming?** Particularly within large multi-year climate-investment programs, the salience of specific components or projects can sometimes vary (due to changing political circumstances, unforeseen conditions during implementation, etc.). To what extent can flexible programming add value in terms of retaining support for and/or boosting the relevance of a climate investment during its roll-out?

   For example, the case study on Tajikistan's Pilot Program on Climate Resilience (PPCR) found that the first of four components exceeded expectations: due to lower engineering costs than initially estimated and a very positive reception from end-beneficiaries, it found openness from local stakeholders to deepen climate commitment. Conversely, the fourth component of the program had to be scaled-back due to incompatibility between design and a changing local political agenda. Since resource allocation was set from the beginning, it was not possible to re-strategize based on this on-the-ground information on performance, stakeholder buy-in and feasibility. A positive example was found in the case study on Indonesia's Clean Technology Fund (CTF) investment plan: four years into implementation, government authorities, private stakeholders and ADB team leaders identified that outcomes could be bolstered by increasing support for reducing financial risks in privately led geothermal projects. This type of investment had become more feasible due to regulatory improvements and was judged to be potentially more catalytic than public alternatives; thus, the investment plan was revised in order to adapt to changing circumstances and emerging opportunities for transformational impacts.

[10] All examples are drawn from case study analysis made by the authors; interpretations should not be attributed by ADB, IDB Group or any other institution here mentioned.

Dimension: systemic change

Fundamental shifts in systems and structures.

3. **How could the process of exploring the feasibility of low carbon or resilient alternatives contribute to the larger objective of building local interest and support for transformative investments**? Often, the design of transformational climate investments will involve sharing international expertise to explore the application and performance of innovative technologies and practices under local circumstances. How can local practitioners and final users best get involved in this process? How can their involvement contribute to change mindsets, build knowledge communities, and strengthen installed capacities to increase appetite and readiness towards transformational change?

   For example, the case study on Colombia's CTF project found that by including bus operators (final users) in test runs with hybrid technologies, these key stakeholders gained a first-hand experience of benefits that were otherwise hard to fully communicate through workshops and reports. This further helped change their perceptions of risk and resistance to change. The case study on Honduras' SREP, documents how the demand for feasibility studies (in this case, for solar photovoltaic technologies) triggered collaboration and sharing among international and local engineers; by linking these processes to academia, the program is helping create a knowledge community that could increase readiness for transformation by expanding local capacities and championship around low-carbon investments.

4. **Does the local implementation partner have a culture of innovation and experience in managing innovation-driven processes**[11]**?** Since pushing for TrC often requires challenging established practices and putting a stop to inertial decision-making, it is advisable that designers at MDBs look for local implementation partners with openness, experience and strategies to manage relatively disruptive innovation within and without their organizations and communities.

   For example, the case study on Bolivia's PPCR shows how the idea to create a financial product for climate resilience in the agricultural sector was championed by Diaconia, a local Development Finance Institution (DFI). In the past, Diaconia delivered the project "Gas in Casa" (Gas in the House), another first-of-a-kind financial product that had the support from the IDB Group. Diaconía's institutional drive towards innovation was consequential in piloting new arrangements and collaboration models to make innovative products take off. This project, for example, required them to re-train their financial staff in order to further understand agricultural practices and climate change, an aspect that was key for implementation.

5. **Do activities contribute to influence practices, decisions and behaviors? How can these be supported and better accounted for?** Often, an important first step towards TrC is to shift mindsets and individual-level appreciation of opportunities and benefits related to low carbon and resilient development (TCLP, 2018). Despite their salient role, these shifts can be hard to measure and capture in results frameworks, which could weaken the case for prioritizing them during implementation. Does the investment require shifting mindsets as an essential logical step towards TrC? If so, how can this be adequately reflected in metrics? What incentives will open the opportunity to shift perceptions, practices and decisions?

   The case study on Tajikistan's PPCR reflects how the task of helping build resilience in the Pyanj River Basin, involved the introduction of modern earth-moving machinery to build bank protections. This "bricks and mortar" intervention was coupled with capacity building efforts, which taught local counterparts how to address environmental considerations, and reflect upon the maintenance activities that would be needed in the long term. According to interviewees, this created a valuable

[11] It is acknowledged that not all investments with the potential to trigger transformational change are radically innovative. Nonetheless, they often do involve innovative approaches, or must challenge the standard way of addressing challenges and opportunities. As such, they often involve unproven methods and technologies, which depend on project performance to gain credibility and point towards larger adoption. This has been an important consideration in understanding the challenges faced by project designers seeking to deliver investments that contribute to TrC.

space where the community felt directly benefitted and open to internalize the principles of climate-preparedness. Nonetheless, consultants working on-site pointed out that interest from the government counterpart might have been strengthened, if the outputs from these activities had been included as key performance indicators in the monitoring and reporting frameworks.

Dimension: scale

Contextually large-scale transformational processes and impacts.

6. **Is there a pipeline of markets for growth related to this climate solution? How is this considered in the investment's design and preparation?** A TrC-oriented climate investment might want to be explicit about how it expects to have a catalyzing effect in a given market. To this end, market analyses and feasibility studies will require enough scope to provide information about additional market segments, sectors, and potential financial partners that may be targeted once the initial scale of the project has been covered. This way, stakeholder consultations and decisions on project design can be attuned to these from the beginning, increasing the likelihood of matching their needs and expectations; also, this process can, with adequate expectations' management, create an appetite for scaling-up a potentially transformational climate solution.

   For example, the case study on Mexico's CTF initiative for financing small-scale energy efficiency projects, explains how project designers initially targeted opportunities in the co-generation sector; nonetheless, its market analysis included an estimate of the potential to grow towards other opportunities, such as substitution of refrigeration and AC units, lighting technology replacement, etc. The design of the project's financial vehicle was sufficiently adaptable to incorporate these and other types of projects as the demand for them materialized (which was possible by engaging these potential users through workshops). The case study on Maldives' SREP program presents another example: Preparatory studies for solar PV deployment considered three "island typologies" (as opposed to a single "generic" study for an island). These types differed according to baseline circumstances and potential for renewable energy penetration. Specific pilot studies with tailored solutions were crafted to address each type. In consequence, results from these pilots were very successful in getting more islands interested (as more specific referents reduced perceptions of risk for different islands) and allowed project implementers to lay out a clearer roadmap for scaling up. A third example is Honduras' SREP, which targeted the installation of solar photovoltaic systems in an industrial rooftop as a demonstration project, due to the potential that had already been identified in other industrial parks with large roof surfaces and high solar radiation.

7. **How do decisions on project design maximize the potential for replication?** It has been observed that in some instances, the selection of simple methods, the use of pre-established networks of resources for implementation, and/or the creation of blueprints that can be adapted, can favor the likelihood of climate innovations being adopted and expanded. Is project design aligned with a scaling-up strategy, and if so, how? What pre-existing structures for wider adoption can it harness? Is the project creating any models that could be subject to adaptation and replication? Will its characteristics make it likely to transcend its initial scope of adoption?

   For example, the roll-out of Bolivia's product for climate resilience included *Unidades Académicas Campesinas* (UACs in Spanish, Peasant Academic Units) as partners in implementation: this is a pre-existing network of university-trained young professionals with basic knowledge of agricultural and livestock sciences, and they have presence in many rural communities in Bolivia. Within the financial product's business model, UACs were made responsible for advising farmers on appropriate measures to adapt to climate change; these measures were purposefully selected and designed by the DFI and UACs to be simple to implement, increasing the chances of being adequately communicated and adopted despite low levels of expertise in rural communities. Although initial scope only included pilot projects in three local agencies, these design features are making scaling-up possible in other Bolivian agencies. Another example is the CTF project analyzed in Mexico, which involved the creation of a financial vehicle and governance structure to aggregate small-scale energy efficiency projects and mobilize them in capital markets. The financial and legal arrangements of this vehicle constitute a blueprint structure for small project aggregation and mobilization, which is being replicated in other markets (e.g. India), and sectors (e.g. renewable energy).

8. **How can M&E appeal to potential partners for future scaling-up?** First-of-a-kind projects often need to prove their performance before they can gain access to a wider community of support for scaling-up. What are the subsystems (e.g. value chains) and the metrics that can get more partners involved? What are ideal channels for dissemination?

   For example, the CTF project in Mexico explained above, by its very nature had to adapt to the rules of capital markets, which require transparent daily reporting of performance that institutional investors keep track of. This is intended to help close a knowledge gap in understanding and accounting for the cumulative profitability of small-scale energy saving projects, while potentially widening the appetite of institutional investors in this type of projects.

Dimension: sustainability

The robustness and resilience of changes.

9. **How can the project detect changes in enabling conditions ahead of time? What types of alternative resources can the project tap into if needed?** Often times, climate investments will need to adapt to changing circumstances in order to stay afloat during the multiple years that a transformational intervention requires. Certain project preparation activities such as stakeholder engagement, risk management strategies and the definition of implementation arrangements can be geared towards making sure the project is receptive and readily adaptable to change. These can help answer: What are the exogenous factors most likely to change and that have an impact on the project? To what degree would the project be able to leverage networks of technical, social, financial support in order to readily respond to these changes?

   For example, implementation arrangements for the Maldives SREP mentioned above, included short feedback loops between the operation staff at the utility companies, and management staff at the Ministry of Environment and Energy. This endowed it with a swift operation that was responsive to on-site implementation challenges, and that avoided decisions based on political shifts. In Bolivia, the selection of a local implementer that had extensive local networks and a deep context-specific insight of market conditions, gave the project resourcefulness at different points in time when the project faced obstacles (for example, upon the approval of a new Law for Financial Services, which had an impact on the business model of the product and called for further financial support).

10. **How are groups with different views or competing interests considered in design?** Due to their scale and ambition, transformational investments are likely to face opposing views. Therefore, it may be of strategic relevance for project designers to map out potential dissenters early on and understand their degree of influence over outcomes. What information can be generated to address the views held by these audiences? What concessions might be allowed to reduce the likelihood of them blocking the way of change?

    For example, Maldives SREP faced opposition from groups that were skeptical of an energy transition towards renewable sources. This was largely due to failed attempts in the past: Other projects had also aimed at reducing diesel consumption but had failed to consider that the over-capacity in current diesel-based machinery resulted in larger inefficiencies once renewables were brought into the energy mix. In consequence, the SREP design conceded to couple investment in renewables with energy-efficiency improvements in diesel-based systems, which both saved energy and made renewables feasible. This neutralized opposition and made the adoption of renewables more palatable in the local context.

Transformational Change

Strategic changes in targeted markets and other systems, with large-scale, sustainable impacts that shift and/or accelerate the trajectory toward low-carbon and climate-resilient development.

Does the political landscape and sector analyses signal a timing that makes transformation achievable? Aiming for TrC will require investments that are not merely ambitious, feasible and supported, but that can deliver change at “a right place” and at “a right time” where and when they can be truly catalytic. Projects may risk falling short of this due to an inaccurate assessment of exogenous variables or unrealistic expectations around enabling conditions. In this regard,

designers can ask: Is there a proven latent demand for a transformational investment? To what extent will its transformational potential depend on exogenous factors remaining stable, and are they likely to do so? Are relevant political, economic and social dynamics favorable to TrC, and if not, how could they be improved?

The Multi-level Perspective (MLP) included in this toolkit seeks to provide project and program designers at MDBs with a framework to systematically think about these factors and dynamics. The MLP has been widely used to study evidence from past social and technical transitions, suggesting that structural and deep change will be most likely in times and places where: a) promising niche-innovations are supported and allowed to gain momentum; b) established norms, practices and technologies are challenged or de-stabilized, and/or c) potent exogenous elements (e.g. the price of oil) create pressures to change the status quo. The MLP is only one of several methodological alternatives that practitioners may consider to more robustly assess whether the conditions for transformation exist, and whether they can be strengthened through readiness activities included in the package of a climate investment.

Note to reader: Limitations

- The case studies analyzed were selected based on the opinion of MDB project leads and literature review. They are not a representative sample of the projects and programs financed by the CIF or designed by these MDBs.

- The case study selection process considered as its main criterion the presence of signals of potential for TrC. Since all cases considered in the sample are relatively recent projects and programs –most of them ongoing–, neither MDB project leads nor the authors of this toolkit can conclusively point towards these cases as being catalyzers of TrC. Nonetheless, authors are conclusive about the contribution that certain design elements in these cases make to strengthening the potential for TrC in program and project preparation. Furthermore, they provide valuable design lessons that project designers can capitalize in order to increase the likelihood of TrC.

- The projects and programs selected were designed before the TrC conceptual framework was developed, and therefore this assessment should not be used retrospectively to score their performance on TrC grounds such as scale, systemic change, sustainability and relevance.

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Note: All sources used for case study analysis are referenced in Module 3; interviewees are listed in the full report, available upon request.

ABBREVIATIONS

ADB	Asian Development Bank
CIF	Climate Investment Funds
CIF-AU	Climate Investment Funds Administrative Unit
DELTA	Development Effectiveness Learning Tracking and Assessment Tool
DFI	Development Finance Institution
DRMC	Disaster Risk Management Committee
E&L	Evaluation and Learning Initiative
EE	Energy Efficiency
ESCO	Energy Service Company
FIP	Forest Investment Program
GAP	Gender Action Plan
GCF	Green Climate Fund
GEF	Global Environmental Facility
GHG	Greenhouse Gases
GIZ	German Corporation for International Cooperation
IDB Group	Comprised of the Inter-American Development Bank, IDB Invest and IDB Lab
IFC	International Finance Corporation
IP	Investment Plan
MDB	Multilateral Development Bank
MLP	Multi-Level Perspective
NDC	Nationally Determined Contributions
PPCR	Pilot Program for Climate Resilience
PV	Photovoltaic (Solar)
RE	Renewable Energy
REDD+	Reducing Emissions from Deforestation and Forest Degradation and the Role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in Developing Countries
SCF	Strategic Climate Fund
SREP	Scaling Up Renewable Energy Program
TCLP	Transformational Change Learning Partnership
TMA	Tool, Method or Approach
ToC	Theory of Change
TrC	Transformational Change
UN	United Nations

Note for all modules: All monetary amounts are in U.S. dollars (US$)

- **Approach:** A set of conceptual or analytical elements that define a specific way of dealing with a situation or problem. Contributes to the definition of the general perspective and objectives of a program or project.
- **Arenas of intervention***: An entry point to take action to alter the course of events and enable or catalyze transformational change.
- **Landscape**: A broad exogenous environment, characterized by trends and long duration processes, that is beyond the direct influence of regime and niche actors, but can open windows of opportunity to exert change. Within the MLP framework, it includes factors that either: 1) do not change (or that change very slowly), such as physical climate, 2) rapid external shocks, such as wars or oil price fluctuations, and 3) long-term changes in a certain direction (trend-like patterns), such as demographical changes.
- **Method:** A procedure for accomplishing or carrying out something, specially a systematic or established one. Usually refers to a step-by-step process that allows practitioners to carry out complex analyses to define specific aspects of a project.
- **Multi-level perspective (MLP)**: An analytical framework to understand the dynamics of socio-technical transitions at three main levels of analysis: landscape, regime and niche. Developed in the early 2000's, it combines concepts from evolutionary economics (trajectories, regimes, niches, speciation, path dependence, routines), science and technology studies (sense making, social networks, innovation as a social process shaped by broader societal contexts), structuration theory and neo-institutional theory (rules and institutions as deep system elements that structure actions)[12].
- **Niche**: Incubation spaces that protect novelties against market pressures derived from the mainstream. Radical innovations, learning processes and networks of novelty contribute to the development of niche innovations, which gain momentum and can eventually compete with established practices or technologies in the regime. Within the MLP framework, this level is the most flexible, transformative arena.
- **Regime**: Established practices and technologies, stable institutions and incumbents. Combines a set of rules in policy, science, culture, technology, industry and markets that stabilize existing systems of decision-making, heuristics, technological operations, etc. Within the MLP framework, it is a level less stable than the landscape, but more stable than the niche.
- **Relevance***: "Strategic advances that accelerate or shift the trajectory of progress toward low carbon and/or climate resilient development in targeted countries and sectors"
- **Scale***: "Catalytic processes that significantly expand and diffuse the development and deployment of low carbon and climate resilient technologies, infrastructure, and other innovations, increasing their supply and access."
- **Sustainability***: "Transformational changes that are designed to be financially, economically, environmentally, socio-politically, or physically robust and resilient. These changes are durable and lasting in ways that lessen the likelihood of reverting back to past practices and persist over time."
- **Systemic Change***: "Deep, fundamental shifts in patterns of individual, institutional, community, and/or private sector decision making, actions, and behaviors in targeted markets or other systems that advance low-carbon and climate-resilient development."
- **Tool:** A standardized framework used to carry out a particular function. Tends to have clear information fields that structure a specific aspect of a project, and usually works alongside other tools as part of a larger method.
- **Tools, methods and approaches (TMAs)**: Practices, analyses and perspectives used during project design and implementation to understand a problem, define a strategy to address it, and measure the effectiveness of the intervention. Among other things, TMAs provide context, validate eligibility criteria, determine feasibility, explain causal relationships, estimate expected outcomes and allow comparisons between multiple alternatives.

Note: Elements with * were taken from: Itad (2019). *Evaluation of Transformational Change in the Climate Investment Funds*. Final Evaluation Report. Elaborated in association with Ross Strategic & ICF. East Sussex, United Kingdom.

[12] Geels, F. (2011). The multi-level perspective on sustainability transitions: Responses to seven criticisms. Environmental Innovation and Societal Transitions 1 (2011) 24–40

02

Module 2: Guiding Sheets for project and program designers

MODULE 2. GUIDING SHEETS FOR PROJECT AND PROGRAM DESIGNERS

Introduction to Module 2

This module presents project and program designers with a series of guiding sheets that can help use everyday tools, methods and approaches (TMAs) in a way that is more conducive to transformational change (TrC). The first two guiding sheets (#1 and #2) present cross-cutting frameworks with key concepts and strategies related to TrC. The remaining ten guiding sheets (#4-through #13) exemplify how TMAs often used in the process of project and program preparation can be tailored to address transformational change dynamics.

Each TMA shown here reflects a unique angle in the process of project and program preparation, and designers are not expected to use them all. Each of them was selected on the basis of a series of case studies (see Module 3), where aspects of design that were identified as contributing to strengthening TrC potential were predominantly linked to these ten TMA.

For further details in the selection criteria and other methodological aspects, please refer to the Full Report, available upon request.

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! Note: The user is advised to first read guiding sheets marked with a * in order to gain familiarity with the concepts of transformational change. All other materials are stand alone documents that can be consulted individually and as needed.

Transformational Change (TrC)

The conceptual framework around TrC applied to climate action is a work in progress being carried out by the **Climate Investment Funds Transformational Change Learning Partnership (TCLP)**. The working definition* of transformational change according to the TCLP is:

> *Strategic changes in targeted markets and other systems with large-scale, sustainable impacts that accelerate or shift the trajectory toward low-carbon and climate-resilient development.*

In order to further characterize it, the TCLP proposed a set of four underlying dimensions of TrC, all of which are interdependent and necessary to achieve TrC: relevance, systemic change, scale and sustainability. Official definitions are shown in gray; additionally, practitioners are presented with some reflections on how they could further operationalize these concepts.

Dimensions of TrC

*This definition is still under discussion and is likely to evolve.

Relevance

Strategic advances that accelerate or shift the trajectory of progress toward low carbon and/or climate resilient development in targeted countries and sectors.

In practical terms, a climate solution that exemplifies *relevance* can be seen as that which advances low-carbon and/or climate-resilient development, by tackling the most important sectors and subsectors in that country or market through the best practices and technologies available. Ideally, a *relevant solution* should be able to demonstrate it is comparatively better than alternatives.

Additional aspects of this dimension according to working definitions by TCLP include: thematic/sectorial relevance, adaptive and flexible design, alignment with contextual political economy factors, achieving co-benefits and advancing sustainable development.

Systemic Change

Deep, fundamental shifts in patterns of individual, institutional, community, and/or private sector decision making, actions, and behaviors in targeted markets or other systems that advance low carbon and climate resilient development.

In practical terms, a climate solution that exemplifies *systemic change* can be seen as that which strategically aligns interventions needed to address key barriers (e.g. regulatory, market, cultural, etc.) and facilitates deep shifts in decisions, institutions and behaviors, in order to advance low-carbon and climate-resilient development.

Scale

Catalytic processes that significantly expand and diffuse the development and deployment of low carbon and climate resilient technologies, infrastructure, and other innovations, increasing their supply and access.

In practical terms, a climate solution that exemplifies *scale* can be seen as that which focuses on processes and impacts that are potentially large, given the context. It has a clear path to expand its benefits, whether it is because it can be replicated, accelerated, or otherwise extended in order to impact wider markets, additional geographies, deeper structures, etc.

Sustainability

Transformational changes that are designed to be financially, economically, environmentally, socio-politically, or physically robust and resilient. These changes are durable and lasting in ways that lessen the likelihood of reverting back to past practices and persist over time.

In practical terms, a climate solution that exemplifies *sustainability* can be seen as that which is financially, economically, environmentally, socio-politically and physically robust, resilient and lasting, meaning it can endure and respond effectively to shocks (e.g. political change, natural hazards, etc.) and therefore lessens the likelihood of reverting to past practices.

CONCEPTUAL FRAMEWORK: TRANSFORMATIONAL CHANGE

Arenas of intervention

A second conceptual tool developed by TCLP is a series of nine entry points for climate action, which seek to enable or catalyze transformational change: these refer to nine arenas of intervention.

Financing

Interventions that **leverage, complement, and coordinate other funding sources** to evolve financing structures over time, with a focus on crowding-in private-sector financing. They use **capital to buy down costs and/or cover risks** in ways that lower longer-term costs and risks through economies of scale and market transparency and development, as well as that use **financial incentives** to shift behaviors and decisions.

Institutions

Interventions that focus on building or strengthening **institutional capacity** among key public sector (national, regional, and local) and civil society organizations operating within the country. Interventions that develop or enhance **institutional communication, coordination, and collaboration** among organizations working in the country, including MDBs and other international partners.

Markets

Interventions that expand **private-sector awareness, capacity, and opportunities** to enter and successfully participate in low-carbon and climate-resilience markets. Interventions that establish clear, predictable **market rules, mechanisms, relationships, and infrastructure** to overcome barriers and support private-sector market involvement.

Policies

Interventions that support the **development or testing of laws, policies, or regulations** that create an **effective enabling environment** for deploying low-carbon and climate-resilient development solutions. Includes laws and regulations promulgated through formal legislative and/or public-sector policy-making processes — as well as through policies and plans.

Practices and Mindsets

Interventions that seek to **influence individual or private-sector practices, decisions**, and behaviors using tools and techniques drawn from social marketing and other fields. These approaches often involve **shifting mindsets and individual-level appreciation of opportunities and benefits**, and they recognize the power of social bonds and relationships in establishing and **reinforcing norms** and practices.

Governance and Engagement

Interventions that build strong and durable **country ownership** and support for CIF-supported interventions; that ensure meaningful **inclusion, engagement, and empowerment** of relevant parties (including women and indigenous peoples); and/or that ensure the full range of salient barriers to transformation are identified and addressed through a **programmatic approach**.

Knowledge and Information

Interventions that **generate, share, and/or diffuse information** to enhance knowledge and expertise to support accelerated and scaled implementation of low-carbon and climate-resilient development. These interventions include **research and analysis, measurement and evaluation, learning partnerships, and training and capacity building for local populations.**

Natural Capital

Interventions that **work with natural systems to reduce greenhouse gas emissions** or make other physical changes to **improve ecosystem resilience**. This arena includes reforestation and enhancement of forest carbon stocks, increasing the agro-ecological potential of an area, and habitat restoration to protect native species, preserve biodiversity, or improve ecosystem health.

Technologies and Infrastructure

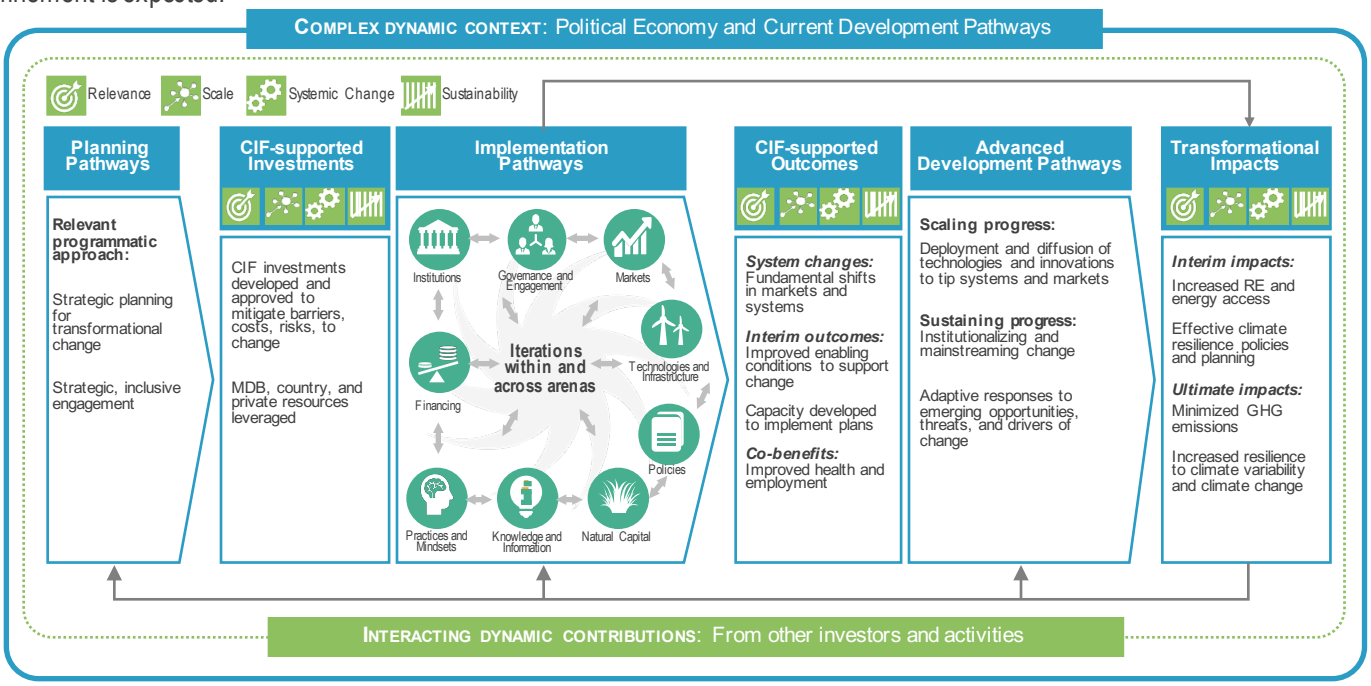
Interventions that support the **first use of key technologies** in a country to demonstrate their effectiveness, that **develop technology deployment competencies** in the private and public sectors, and/or that **drive reductions in technology deployment costs and risks** (e.g., through economies of scale, implementation data to inform investment risk assessments). Interventions that **improve the infrastructure** necessary for low-carbon and climate-resilient development.

Source: TCLP, Climate Investment Funds

In order to achieve these transformative interventions, practitioners are advised to "map-out" prevailing practices, technologies and values tied to the appropriate arena of interest. The guiding sheet on the multi-level perspective (MLP) framework offers insight on how TMAs can help achieve this objective.

CIF Draft theory of transformational change

TrC within the TCLP is analyzed according to the following theory of transformational change (ToTC). The theory aims at both fundamental shifts, and improved enabling conditions needed to make transformational change possible. This ToTC is an iterative work, and further refinement is expected.



Source: TCLP, Climate Investment Funds

The "Complex dynamic context" to which this theory of change for transformational change refers to, is further unpacked through the use of the multi-level perspective (MLP, included in the second guiding sheet of this toolkit), which cross-cuttingly addresses exogenous factors and enabling conditions that may influence project and program design in all nine arenas of intervention.

TrC Delivery Models

The TCLP has identified two basic delivery models for transformational change in climate investments:

Scale to Systems

Refers to the deployment of large volumes of concessional finance to demonstrate technological feasibility, supported by financial and operational transparency, and economies of scale.

Systemic change is expected to follow as policy makers, developers and investors adjust risk perceptions and mobilize finance. Sustainability derives from adjustments to the policy environment and sustained investor interest. This model is more common to investments of the Clean Technology Fund.

Systems to Scale

Refers to the use of a *systems change lens*, and operates through capacity building, awareness raising, strengthening the enabling environment, institutions and governance, and piloting small-scale interventions to deliver proof of concept.

Scale is expected as a result of an enabling environment that is more supportive of change, successful pilots and increased interest from investors. This model is more prevalent in Scaling Up Renewable Energy, Pilot Projects for Climate Resilience, and the Forest Investment Program.

CIF Hypotheses on Transformational Change

The following working hypotheses can inform practitioners on how transformational change has been proved to work in the past, and in what contexts:

H1 The provision of long-term concessional finance at scale can be a crucial factor in changing perceptions of risk among investors, particularly in the context of infrastructure projects with high capital costs, complex supply chains, or innovative technology profiles. (Particularly in programs related to clean technologies and renewable energy).

H2 Combining climate mainstreaming with investment programming creates incentives for policymakers to engage on the climate agenda, while also providing learning opportunities to inform the better development of relevant policies, planning, and institutional frameworks across sectors. (Particularly in programs related to climate resilience)

H3 Coordinated, multi-level efforts that strengthen policy, institutional, social, and market capacities are needed to address fundamental market and policy failures to value natural capital and wider environmental externalities. (particularly in programs related to the forestry sector)

H4 It is possible to create market tipping points for (near) cost-competitive low carbon technologies by combining policy reform with support for market development, incentive frameworks, and other innovative approaches to mitigate investor and developer risk. (Particularly in programs related to clean technologies and renewable energy)

H5 Working through intermediaries and supporting value chain development is an effective way to deliver transformation in the context of smaller-scale investments in climate goods and services.

H6 Working through the MDBs has enabled the CIF to influence the climate orientation of much larger development finance institutions and funding flows.

H7 Gender equality efforts in institutional, policy, and investment processes help the CIF support transformational change.

These hypotheses are one of the key outcomes of the transformational change evaluation and evidence synthesis work by the CIF TCLP which includes sector-specific recommendations, case studies and examples. The outcomes of this work are available online: https://www.climateinvestmentfunds.org/evaluation-and-learning

For further reading

Evaluation & Learning Initiative/Transformational Change Learning Partnership (2018): *Transformational Change in the Climate Investment Funds. Summary of findings from an independent evaluation and evidence synthesis.* Washington, D.C., USA, 20 pp.

Itad (2019): Evaluation of Transformational Change in the Climate Investment Funds. Final Evaluation Report. Elaborated in association with Ross Strategic & ICF. East Sussex, United Kingdom, 72 pp.

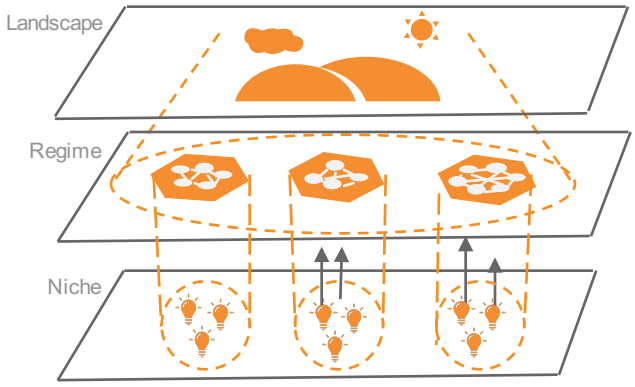
Overseas Development Institute (2019): *Transformational change in the Climate Investment Funds. A synthesis of the evidence.* London, United Kingdom, 80 pp.

ANALYTICAL FRAMEWORK: THE MULTI-LEVEL PERSPECTIVE (MLP)

Description

The Multi-Level Perspective (MLP) is a framework which in the past has been used to describe fundamental shifts in social and technical systems. See for example: Geels, F. (2006). "The hygienic transition from cesspools to sewer systems (1840-1930)". *Research Policy* #35.

This framework conceives change through the lens of dynamics occurring at three different levels: landscape, regime and niche. These levels are distinct in that they reflect different degrees of "stability" in the factors that determine practices, technologies, social values, etc. Elements at the landscape level are the most difficult to influence, while the regime can be nudged towards shifts, and the niche level is a space for experimentation.



Adapted from Geels, F. (2001). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. Research Policy 31, 1257–1274.

With this framework in mind, practitioners can further think of what landscape elements they must seek to leverage, and what elements in the regime and niche level they could influence by applying some of the CIF hypotheses and delivery models for TrC.

Landscape

A broad exogenous environment, characterized by trends and long duration processes, that is beyond the direct influence of any individual actor, but can open windows to exert change.

(e.g. demographic trends, oil prices, exchange rates, international agreements, political values)

(Socio-Technical) Regime

Deep structures, stable practices, institutions and incumbents. Combines a set of rules in policy, science, culture, technology, industry and markets that stabilize the *status quo.*

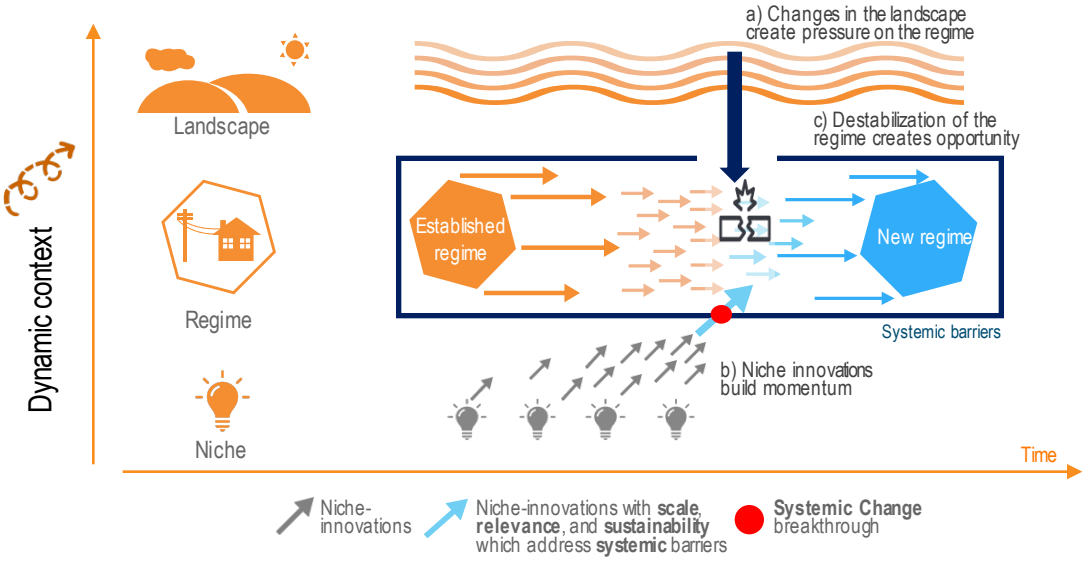
(e.g. traditional agro-forestry practices, with a given set of technologies)

Niches

Incubation spaces that protect climate novelties against mainstream market selection. Radical innovations, learning processes and networks of novelty are found here.

(e.g. military laboratories where Internet was developed)

Under this framework, transformation is understood as a shift from one sociotechnical regime to another, which can be catalyzed by niches gaining momentum, pressures from the landscape, a destabilization of the regime, or a combination of all three. Also, these dynamics are continuously changing, and can be influenced through concrete, practice-based tactics (explained in the reverse side of this sheet).



Practitioners can use MLP levels to map out the key system dynamics related to their proposed climate investment.

This can help define the kind of tools and tactics needed to prepare it, and strengthen its potential for transformational change.

Adapted from Geels, F. (2001). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. Research Policy 31, 1257–1274.

ANALYTICAL FRAMEWORK: THE MULTI-LEVEL PERSPECTIVE (MLP)

MLP Tactics to Trigger TrC

The MLP framework thinks of transformation as a sequence of tactical moves among regime insiders (incumbents –some in favor of transformation) and niche outsiders (innovators) in a struggle to shape the prevailing sociotechnical regime. Tactics represent the application of mechanisms meant to influence the reconfiguration of the socio-technical regime. Some of them can be found in literature (see: Van de Poel, 2000), while others can be drawn from real-world examples, such as those found in Module 3 (Case studies).

! The following list includes several of the key tactics that practitioners could apply when seeking to change established practices and promote transformational change. These tactics can inform the selection and application of tools, methods, and approaches, and in tandem with TrC arenas of interventions and hypotheses, can strengthen the TrC potential of an investment.

1 **Seize ongoing transformations**
The capacity to build upon structural or programmatic changes in the target country or sector, as well as the ability to a) identify and leverage "windows of opportunity" for the benefit of the climate investment; and b) anticipate and plan for large-scale shocks, harnessing them in favor of the investment.

2 **Articulate barriers and solutions**
The ability to gather disperse data and knowledge communities into a sole dialogue, a coherent diagnosis of the barriers to transformation (through powerful, legible data and images) and a unified strategy geared towards addressing them. It includes efforts to develop local competencies in understanding, assessing, and lobbying in favor of deep systems-level shifts.

3 **Issue linkage**
The ability to strongly, directly and relevantly tie climate action with problem agendas that are salient to a targeted audience (clear demonstration of co-benefits to decision-makers, allies, beneficiaries).

4 **Build coalitions and involve influential agents of change**
The capacity to partner-up with key players, some of which may lie beyond the conventional scope of an intervention. Align interests with strong local leadership that can champion a mind shift, set an example or kick-start a trend to adopt a given climate solution.

5 **Support and design with front-runners and first-movers**
Adoption of a model geared towards identifying and co-creating with leaders that are attuned to emerging opportunities to shift regimes or achieve niche breakthroughs..

6 **Crowd-in and leverage resources**
The capacity to garner additional support and identify local existing resources which can de-risk an investment, create a market appetite for it, bring down-costs and ultimately inject long-term sustainability into it.

7 **Identify and empower promising niches**: The strategic selection of innovations with early or advanced signs of having relevance, scale, and ability to tackle systemic barriers, and to further support them through access to resources, to knowledge networks, enhanced credibility, etc.

8 **Experiment**
To provide a space for the test-of-concept for radical innovations or adjustments in rules within controlled environments, in support for a learn-by-doing approach that can be valuable when innovation is radical and no referents exist.

9 **Create adaptive platforms**
The capacity to design solutions that are a) broad or flexible enough to be easily and effectively replicated in other contexts (a "blueprint" configuration); and b) context-specific, but capable of internalizing short-feedback loops for quick learning and adapting to changing contexts.

10 **Build evidence to challenge established technologies and practices transformations**
The capacity to provide conclusive proof of how regime-level arrangements (e.g. regulations, institutions) result in unsustainable damages and/or how alternative practices may be able to improve current conditions. Successful applications of this tactic often involve demonstration, which grants actors the ability to directly experience the functionality and convenience of a climate solution.

11 **Promote inner adoption**
A move towards ultimately shifting entire institutions, by first internalizing change within the culture and practices of specific organizations or social groups.

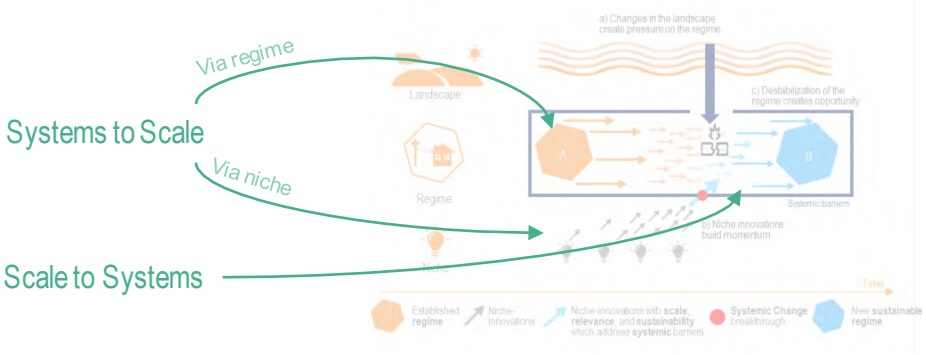
12 **Strategize for a gradual transition**
A move towards full regime shift or niche innovation, by strategically introducing intermediate solutions or incremental changes that set the ground for further transformations.

Please note that these tactics will be further referenced in TMA guiding sheets (#4-#13), providing further detail on their connection to tools, methods and approaches.

ANALYTICAL FRAMEWORK: THE MULTI-LEVEL PERSPECTIVE (MLP) AND TRC

How to design for transformational changes: TrC and MLP

Although the understanding around transformational change and its triggers continues to evolve, the TrC and MLP frameworks are reflective of general pathways that have been identified in real-world sustainability transitions.



The lens of TrC and MLP show that practitioners aiming for transformational change will need to understand the diverse set of dynamics that happen at different levels within the context of climate investments.

Practitioners will often need to work with incumbents in the regime, which are responsible for creating enabling conditions in policy, market, technological arenas for novelties to break systemic barriers. Also, they will need to be particularly attuned to landscape dynamics, to identify and anticipate factors that are salient in creating opportunities or risks.

The *scale to systems approach* to delivering TrC suggests the need to seek and empower niche innovations that are relevant (with the best characteristics relative to comparable niche innovations), scalable (by targeting market niches that are either already large or have the potential to grow), sustainable (commercially and financially viable without external support in the medium to long term and able to navigate changing circumstances) and that can effectively tackle systemic change (the key barriers that are blocking change). Pushing these innovations into the established set of practices and technologies (the socio-technical regime) will require to counter perceptions of risk and prove the financial viability of such investments.

The *systems to scale approach* envisions two ways to deliver TrC: the first alternative is to work at niche level, piloting at small-scale and building networks of first-movers to strengthen an innovation that can address a key market failure, and push it into the regime. The second alternative is to work directly at the regime level, improving the enabling conditions to make them more welcoming of transformational changes. This will often be done by modifying regulations and standards, institutional operations, building capacities and raising awareness, among others. A key objective for practitioners at this level, will be to design in order to phase out distortions and barriers that are preventing climate solutions from breaking into established standards and practices.

Scoping a transformational investment

Now that practitioners are familiar with TrC and MLP, it can be noted that a useful way to think about the elements within a regime that a climate intervention can seek to shift, are the nine entry points or arenas of intervention of the TCLP framework:

1. Which are the established practices and technologies that interventions in these arenas must touch upon?
2. What types of tools, methods, and approaches should be deployed in order to catalyze deep shifts in these prevailing practices? Will some tools be more effective than others depending on the arena that will be intervened?

Used in tandem with TCLP's arenas of intervention, the MLP framework can help practitioners define the appropriate scope of preparatory analyses in order to gear an investment towards transformation. Stakeholder engagement and information gathering should cover all three MLP levels (niche, regime, landscape) and the appropriate arenas to be impacted by the intervention.

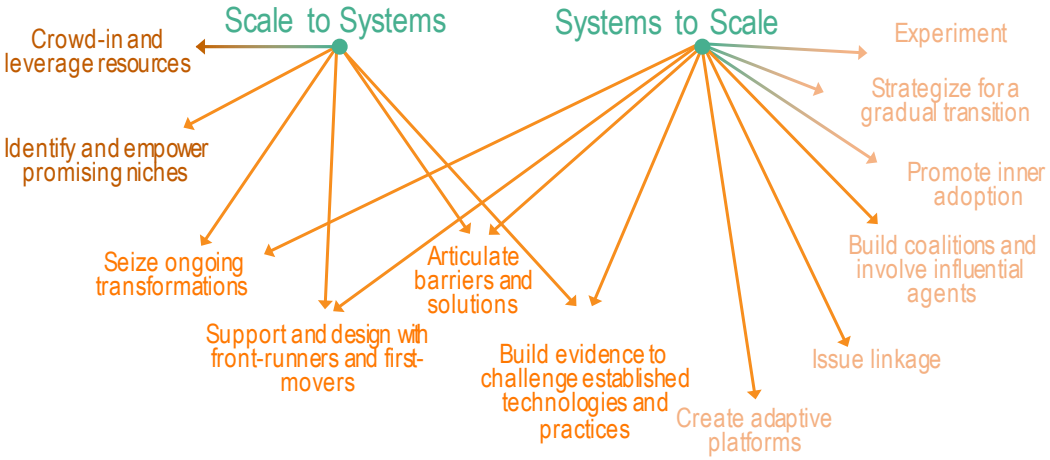
ANALYTICAL FRAMEWORK: THE MULTI-LEVEL PERSPECTIVE (MLP) AND TRC

The following figure can guide a project designer from a) defining the suitable delivery model for an investment, to b) mapping out specific tactics appropriate to that model; to c) selecting the TMAs that can best contribute to gearing the investment towards TrC.

1. What delivery model for transformational change does the proposed investment require

Scale to Systems and / or Systems to Scale

2. What kind of tactics are best suited to this delivery model for transformational change



3. Which TMAs can be more useful at advancing the proposed tactics

MLP-Tactics	Theory of change	Stakeholder engagement	Programmatic approach	Market analyses	DELTA tool	Economic analyses	Gender inclusion framework	Principles of blended finance	Prefeasibility and feasibility studies	Risk assessments
Crowd-in and leverage resources	✓✓	✓✓	✓✓	✓	✓✓			✓✓		
Identify and empower promising niches	✓✓	✓✓	✓	✓✓	✓✓	✓✓		✓✓	✓✓	
Seize ongoing transformations	✓	✓	✓✓	✓✓	✓✓		✓✓			✓✓
Support and design with front-runners	✓	✓✓		✓✓				✓	✓	
Articulate barriers and solutions	✓✓	✓✓	✓✓	✓		✓✓			✓	
Build evidence	✓				✓✓	✓✓	✓		✓✓	✓✓
Create adaptive platforms	✓	✓		✓✓					✓✓	✓
Issue linkage	✓		✓✓		✓✓	✓✓	✓✓			
Build coalitions	✓	✓✓	✓✓	✓✓			✓✓	✓		
Promote inner adoption	✓	✓✓					✓	✓✓	✓	
Strategize for a gradual transition	✓✓	✓	✓	✓		✓			✓	✓
Experiment	✓								✓✓	

✓✓ Direct support ✓ Additional support

For further reading

Geels, F. et.al. (2016): "The enactment of socio-technical transition pathways: A multi-level analysis of the German and UK low-carbon electricity transitions (1990-2014)."

Grin, J., Rotmans, J, et.al. (2010): Transitions to Sustainable Development. New Directions in the Study of Long Term Transformative Change. Routledge. NY, USA Pp. 19-28

Van de Poel, I., 2000. "On the role of outsiders in technical development". *Technology Analysis & Strategic Management*, vol. 12 (3), pp. 383–397.

04

TMA GUIDING SHEETS TO DESIGN FOR TRC

HOW TO READ THE TMA GUIDING SHEETS

TMA guiding sheets

The following set of materials includes **ten guiding sheets**, one for each of the **tools, methods and approaches** (TMAs) included in the toolkit.

The ten TMA guiding sheets refer to concepts explained in the previous TrC and MLP sections. Even though Module 1 offered a glance at the key concepts included in each framework, it is **highly advisable to read the guiding sheets on TrC and MLP before diving into the ten TMA guiding sheets**.

The ten TMA guiding sheets have a standardized layout, containing the following 11 sections:

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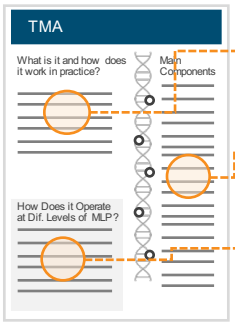

1. What Is the TMA and How Does It Work in Practice?
2. Main Components of the TMA
3. How Does It Operate at the Different Levels of MLP?

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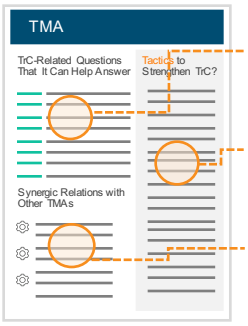

4. TrC-Related Questions It can Help Answer
5. Through which MLP-Tactics Can It Strengthen TrC?
6. Synergic Relations with Other TMAs

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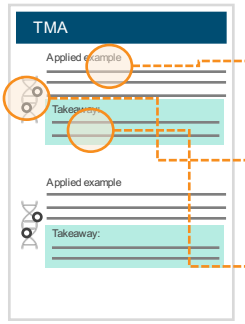

7. Applied example of the TMA in a particular case study[1]
8. Key TMA components in the applied example[1]
9. Takeaway from the applied example[1]

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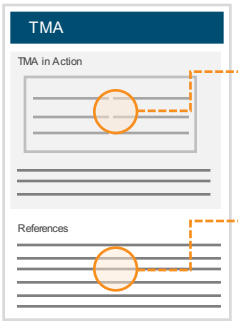


10. TMA in action: an extract from a case study illustrating its use
Note: Complete case studies can be found in Module 3
11. References

! Practitioners are not advised to use all ten tools methods and approaches (TMA) here presented. Although these TMA are complementary and support transformational change in a unique way, some may not be possible or applicable to all investments. Nonetheless, designers are encouraged to keep in mind how a given TMA may be strengthened by the synergic use of another TMA (see element #6 above). Also, please keep in mind these TMA can (and should) be complemented with more specific analyses (e.g. a climate risk assessment).

[1] Sections 7, 8 and 9 are repeated for each applied example. Number of examples per Guiding Sheets is usually three.

What Is It and How Does It Work in Practice?

In the context of transformational change, a theory of change (ToC) should support the task of laying out the complex relationship between an investment's envisioned objective and a planned set of interventions. Other supporting tools (e.g. logical frameworks) will later help designers map out specific project activities in a more linear, cause-effect chain fashion; although an oversimplification, these will complement ToC and help structure the design of an investment. An important reference to develop a ToC is the set of working hypotheses developed by TCLP (see the "Transformational Change" guiding sheet in this toolkit).

The process behind a ToC tends to focus on the following steps: 1) understand the political economy (see the guiding sheet on market analysis for further guidance); 2) map key stakeholders; 3) envision an overall objective; 4) brainstorm required activities/interventions to achieve it (probes can be made around TrC arenas of intervention); 5) discuss the logical relationships between activities.

ToCs are likely to evolve through time, as information becomes available and understanding is refined. Therefore, designers should also consider as important steps to: 6) collate evidence and identify information gaps that underlie the pathways of change; 7) continuously evaluate the ToC. In all, it is considered that ToC should be re-visited at least two times: first, to validate core assumptions, after additional information emerges; and second, when the intervention is being tested or implemented on-field, to further verify the compatibility among activities and expected outcomes.

In practice, MDB and CIF documents provide a narrative explanation of an investment's rationale: first they offer an overview of the sector and the challenges to address; then they lay out the activities and key indicators to measure progress, usually through a logical framework. However, project documents do not always include a clearly laid-out causal chain with the explicit assumptions connecting activities, outputs and outcomes.[1]

How Does It Operate at the Different Levels of MLP?

A **landscape**-oriented revision of expected outcomes and key assumptions should be used to adequately calibrate an intervention's design and ambition to elements that can be hard for a project to directly influence, such as value systems and macro-economic trends. For example, a resilience project aiming to implement a self-help disaster-response system, may need to question if communities are indeed willing to reduce reliance on central government.

At the **regime level**, a ToC should help explain why established practices are stable, and on that basis map all sub-regimes or arenas that must be impacted by the investment in order to achieve its full transformational ambition. For example: if the goal is to trigger private sector projects for large solar photovoltaic systems (PV), an intervention may initially seek to act only on improving access to finance. A revision of ToC's causalities and assumptions may reveal whether tackling the financial arena is sufficient, or rather, if regulation reform will need to be addressed as well.

At the **niche level,** ToC should be used to gear innovative solutions or practices towards breaking into the regime. In this sense, it can guide inputs and activities towards outputs that contribute to: build momentum around the intervention, de-stabilize current practices and harness landscape-level pressures. For example, a microcredit program for agricultural resilience may gear part of its design towards convincingly demonstrating how its application successfully compares to the productive yield of non-resilient investments, thus challenging current practices and further strengthening the case for its wider adoption in established institutions.

[1] A challenge in implementation derives from implicit assumptions stemming from un-verified opinions and beliefs, which can be prevented by making all key assumptions explicit and subject to multi-stakeholder revision.

Main Components

Regardless of the specific variation to be adopted, the following components are key in setting a solid investment rationale:

- **Inputs:** Financial, human and institutional resources needed to carry out the proposed activities (e.g. solar-PV technology imports; improved seeds and cattle species).
- **Activities:** Direct interventions that will be carried out as part of the investment (e.g. installation of a solar PV system; design of a platform to estimate improvements on agricultural yields as a result of improved seeds use).
- **Outputs:** Direct results expected from an activity (e.g. a solar PV installation; a resilience micro-credit for farmers): they are the *what*.
- **Outcomes:** Benefits expected to derive from the outputs (e.g. diesel consumption is reduced; beneficiaries' income does not vary as a product of a heat wave): they are the *why.*
- **Catalytic replication outcomes*:** Result statements that articulate the expected multiplying effect of the project. They state the investment's ambitions in terms of scale, across institutions, sectors and borders (e.g. other industrial plants adopt solar PV; resilience credits are mainstreamed by private banks).
- **Transformative impact*:** Result statements that speak to the "transformation" sought by the investment (e.g. decreased reliance on fossil fuels; financial stability in farmer communities' income).
- **Goal:** Highest level of results expected from the overall programmatic, regional or country strategy. (e.g. low carbon development; improved climate resilience – as stated by the CIF).
- **Assumptions:** Logical connections between inputs, activities, outcomes, outputs, impacts and goals. They state things that are taken for granted (x causes y; successful implementation relies on z; a given condition will not change). It is crucial for these to be made explicit and evidence-based.
- **Indicators, targets and baseline:** Elements that will be measured to monitor progress and verify whether an outcome was achieved.

**Note: The CIF have established a standardized logic model that provides orientation for operating each CIF fund, hereby considered. Additional elements that offer further insight into transformational objectives are included. Sources: CIF (2010), complemented with input from White and Raitzer (2017), and USAID (2017).*

TrC-Related Questions That It Can Help Answer

1. Relevance. What is the intended transformation in this country or market? How will climate investment tackle the most important sectors for low-carbon and/or climate-resilient development?

2. Relevance. How does the rationale behind transformation translate into a chain of causes and effects? What core assumptions will be connecting activities to outputs and outcomes? How will this logic design outperform alternatives in achieving intended goals?

3. Relevance and systemic change. Can (and should) a climate investment tackle more than one of the driving forces behind the intended transformation? If so, what kind of phasing would make it the most strategic and flexible?

4. Systemic change. Do any of the core assumptions behind transformation involve a shift in patterns of behavior and decision-making? How does the investment expect to achieve this? How will institutional change be managed?

5. Scale. How can the investment have multiplying effects across institutions, sectors and borders? If it were to be replicated, would activities, assumptions, etc. need to change?

6. Sustainability. Are assumptions too strongly rooted on factors the project or program cannot control? How could they depend less on them?

7. Sustainability. Are there any inputs or activities that can be added in order to strengthen the likelihood of assumptions holding up throughout project or program implementation?

Synergic Relations with Other TMAs

- **Programmatic approach:** Allows theories of change to set more ambitious objectives and goals by intervening on various sub-regimes or arenas, and tap into an wider range or resources, partners and activities to reach them.
- **Market analyses:** Helps identify the network of problems and factors affecting a particular country or sector, in order to develop theories of change that are comprehensive in the range of elements and pathways considered. They can also make sure ToCs embrace market dynamics, which is a key aspect of scaling beyond the intervention.
- **Stakeholder engagement:** To the extent that stakeholder engagement is meaningful and multi-sector, this will allow project designers to tap into local knowledge to better identify the problems, validate assumptions, or to develop the solution in a participatory manner, empowering stakeholders and increasing buy-in.
- **Risk assessment:** Can help identify additional activities to consider in the theory of change, to avoid critical risks and weak assumptions. It can also be useful to identify alternative pathways that may be worth considering.

Through Which MLP-Tactics can it strengthen TrC?

In a sense, a theory of change defines which tactics are most relevant for achieving transformation through a given investment. As such, this tool can be useful for any tactic within the MLP framework. The following are considered the ones with greatest TrC potential when designing a theory of change:

Articulate problems. An initial step to develop a theory of change is to identify and systematize the problems to address. By clearly setting out causal chains and evidence-based assumptions, theories of change can help project designers organize knowledge communities around a strategic effort, building momentum for a given climate solution to thrive.

Identify and empower promising niches. Theories of change should map out the specific activities that will be carried out to create a more favorable environment to nurture climate innovation, to mainstream climate innovations, or both.

Transitional strategizing. Theories of change are developed in reverse – they start by setting goals and build down to specific activities and inputs. This deductive approach can help identify places where incremental steps are useful (or even required) in order to deliver TrC. By prioritizing outcomes over preidentified interventions, theories of change offer a critical lens though which to identify if incremental steps are essential stepping stones towards transformational change (read ahead to the case on Colombia CTF), or if in contrast, these could further contribute to the permanence of suboptimal elements in the regime.

Crowd-in and leverage resources. Theories of change define inputs to be fed into a climate solution and outputs to be obtained. Both elements can be strategically tailored towards harnessing local resources, and providing results that are appealing to additional partners, which in practice add to the cost-effectiveness, local ownership and long-term sustainability of a solution, making it more likely to transform established practices.

An applied example from the Maldives case study (SREP)

The theory of change behind Maldives' *Preparing Outer Islands for Sustainable Energy Development* incorporated a holistic approach to energy systems, combining interventions to promote RE generation, with adjustments to the diesel-based energy grids, in order to effectively achieve clean technology adoption.

Using evidence from previous experiences (which focused solely on RE) the intervention did not assume reducing demand for diesel would reduce diesel consumption (inefficiencies in the baseload equipment's starting system resulted in great diesel expense). The project rationale incorporated activities to pair up solar PV installation with the deployment of more efficient diesel machines, which did not only increase effectiveness, but also garnered support from former detractors.

Takeaway: Build a theory of change around full systems, beyond renewable energy alternatives

A thorough identification of assumptions connecting cause-and-effect chains can bring underlying faults, interests, risks and requirements to the surface, so project designers can address them.

Additionally, by using comprehensive approaches to theories of change, investments can identify problems at different levels, with varying degrees of relevance for different stakeholders; this will deepen local understanding and help develop solutions more likely to be owned by end users.

An applied example from the Mexico case study (CTF)

Mexico's *Capital Markets Solution for Energy Efficiency Financing* began with an initial theory of change that sought to trigger small-scale energy efficiency (EE) projects by opening a commercial credit line. A market analysis that included stakeholder consultation revealed that the core problem behind low finance for EE was not the lack of a credit line, but rather the incompatibility between criteria used by commercial banks, and the type of enterprises with capacity to implement these projects (ESCOs). Thus, the theory of change was modified early on, setting as core activities the design of an aggregation platform for small RE projects and the creation of a risk-mitigation mechanism, in order to better align the ESCO model to the risk-profile required by commercial banks.

Takeaway: Iterate theories of change with end users

Theories of change should not be regarded as static tools that are established only in the initial steps of a project or program. The ability to adjust as information arises and barriers become clearer, or as contexts develop, requires designers to use ToC as a continuous, collaborative tool to explore alternative pathways that can get them to desired transformational outcomes.

An applied example from the Colombia case study (CTF)

Colombia's *Financing Program for the Technological Transformation of Bogota's Integrated Public Transportation System* (SITP) could have aimed at the transformational outcome of mainstreaming clean technology buses in Bogota's SITP (e.g. electric vehicles). Early on, this was acknowledged as unfeasible at the time, due to the prices of electricity and clean technology inputs (a landscape-driven constraint that made electric buses too expensive). The Program's theory of change identified this obstacle, but also recognized that it could still play a role in addressing other (regime-level) barriers to advance clean technology adoption in Bogotá: the lack of evidence on the technology's performance under local conditions, and the absence of financial mechanisms to ease procurement of clean technology buses. In response, activities in the Program aimed at tackling these two barriers, piloting an intermediate technology that was more financially viable (hybrid buses). Project outcomes served to lay the groundwork for further triggering of transformation when technology prices enabled the mainstream adoption of the optimal low-carbon alternative.

Takeaway: Define if the TrC outcome is to achieve a systems' reconfiguration, or to set the groundwork for it

Some projects seek transformational change by building on existing enabling conditions (they "ride the wave"); others may find their transformational role in the creation of enabling conditions, which may not always result in highly visible transformation but are nonetheless necessary steps.

Climate investments should be clear and upfront (in their rationale or theory of change) about the TrC role they aim to play, consistent with the "readiness" there is for their ultimate objective. On this basis, they can create conditions for future adoption, while setting realistic expectations about their contribution to transformational change.

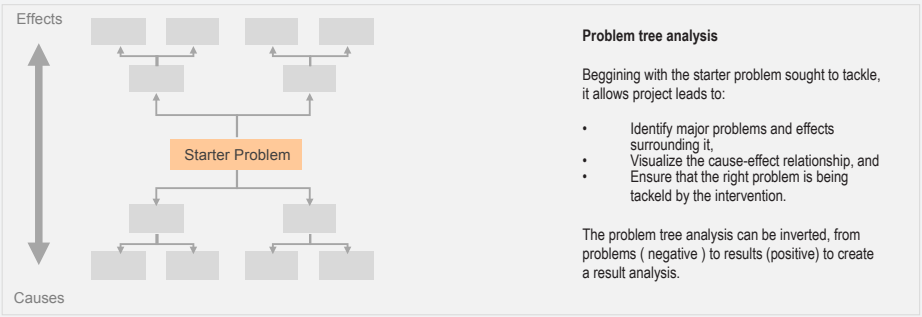
Illustrative diagrams for design

Theories of change must always seek to embrace complexity, and thus, they work beyond cause-and-effect chains. Nonetheless, for practical purposes, practitioners can use diagrams. They can help systematize and make more explicit the process of creating a theory of change - but they should not be considered as rigid models to capture information.

An explicit theory of change can lead to improved design and phasing, since it helps ensure activities are consistently and realistically geared towards an output. It can also promote further checks and balances regarding key assumptions behind the rationale of a project.

The diagrams shown here seek to illustrate the traditional pathway to develop theories of change according to best practices. Please note that diagrams are simplified versions of actual tools, and their objective is illustrative.

Previous analyses in theories of change have pointed out that establishing rigid diagrams or matrixes to capture them can beat the purpose of this tool, since it can come across as an administrative procedure to complete, rather than the critical space to design an investment's rationale (Vogel, 2012).

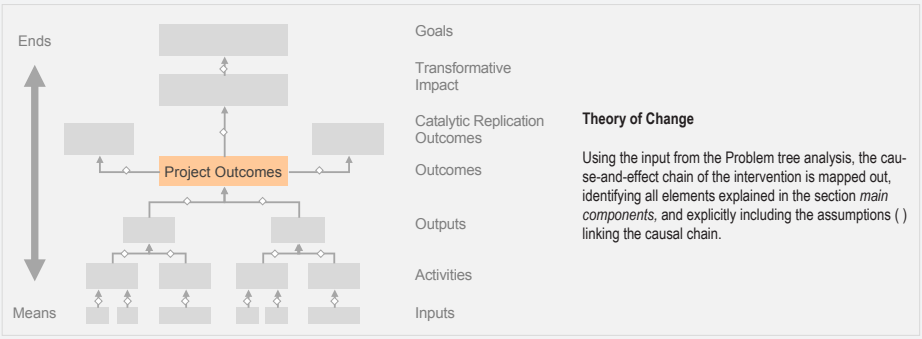


Problem tree analysis

Beggining with the starter problem sought to tackle, it allows project leads to:

- Identify major problems and effects surrounding it,
- Visualize the cause-effect relationship, and
- Ensure that the right problem is being tackeld by the intervention.

The problem tree analysis can be inverted, from problems (negative) to results (positive) to create a result analysis.



Theory of Change

Using the input from the Problem tree analysis, the cause-and-effect chain of the intervention is mapped out, identifying all elements explained in the section *main components,* and explicitly including the assumptions ( ) linking the causal chain.

	Indicator	Baseline	Target	Reporting mechanisms	Others
Outcome					
Output					
Activity 1					
Activity 1					

Design and Monitoring Framework

As a final step, the activities, outputs are transformed into a matrix, identifying indicators, baselines, targets and reporting mechanisms for each.

Other columns can be added, such as actors responsible, timeframes and risk.

Source: developed by C230 Consultores, based on ADB (2019). Guidelines for Preparing a Design and Monitoring Framework. Mandaluyong City, Philippines.

Note: Diagrams are simplified versions of actual tools, and their objective is illustrative.

References

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What Is It and How Does It Work in Practice?

The programmatic approach is one of the most important vehicles from which to set and pursue an integral vision for transformation. In broad terms, it involves a process of strategically linking multi-year investments and strengthening country ownership over climate interventions, with the objective of maximizing coordination and impact. This is often enabled through the establishment or strengthening of country coordination mechanisms, the promotion of MDB country-level partnerships, and other resources that can facilitate synergistic relations in favor of a coherent set of climate projects, all pushing together towards transformational change throughout planning and implementation.

This approach is by far one the most distinctive elements of design when working with the Climate Investment Funds (CIF); in practice, CIF have mainstreamed it through the development and implementation of Investment Plans (IPs), a process which is led by government officials within recipient countries. Other climate funds, such as the Global Environmental Facility (GEF) and the Green Climate Fund (GCF) are either implementing or considering their own version of a programmatic approach. The analysis here presented uses the CIF model as its main reference.

How Does It Operate at the Different Levels of MLP?

At the landscape level, the programmatic approach should be used to seize *exogenous opportunities* for climate actions and shield them from potential shocks; this can be done by amplifying multi-stakeholder commitment and firmly anchoring support for the IP in *landscape-level* trends and *structures.* For example: through a firm alignment with *international commitments* such as the Nationally Determined Contributions (NDC), political support for investing in clean energies (as reflected in an IP) can be made deeper and less dependent on whether macro-economic conditions remain the same.

At the regime level, because of its keen interest on building country ownership and commitment over climate action, this approach tends to garner political will from *actors within prevalent decision-making structures.* This feature should be powerfully harnessed in support for TrC, by using these leaderships to exert pressure on *established practices* that are blocking the path towards low-carbon and climate resilience. For example: the production and approval process of an IP, is an ideal moment to influence the country into committing to phasing out subsidies, tariffs, and other distorting barriers that prevent effective action for *regime shift* and niche *innovation.*

At the niche level, this approach should ensure the portfolio of country-supported interventions (in the IP) always includes support for promising *radical innovators*, so they can gain credibility, access to resources and other conditions necessary for testing, proof-of-concept and *aggregation*, preparing them to effectively confront conventional technologies and practices. Among other channels, this can be bolstered through Private Sector Set- Asides, which allow non-governmental actors to spearhead innovation with direct support from the CIF and MDBs.

Main Components

Investment Plans (IPs) are a main reference for touching upon the full set of analytical elements considered essential to incorporate a programmatic approach in climate investments. Several IP elements are addressed in further detail throughout this toolkit ; also, specific operational guidelines exist for the elaboration of IPs in the forestry, renewable energy, climate resilience and clean technology sectors . Therefore, the following components hinge only on characteristics that are uniquely relevant to the programmatic approach, and that are particularly useful in designing for TrC:

1. **Promotion of government leadership.** Strategies to build upon existing country policies and programs, and by requiring country government to write the proposal for investment (the IP); co-finance the program of interventions; and manage implementation, monitoring and reporting activities.
2. **Multi-stakeholder consultation.** Joint planning missions, broad consultations processes, multi-sectorial dialogues, among others, always with a focus on garnering diverse perspectives and inputs.
3. **Establishment of coordination mechanisms.** High-level dialogues, institutional arrangements, which serve to align priorities and actions among government ministries, MDBs, non-governmental organizations, etc. Within government, a “country coordination mechanism” is required. Also, guidance to clarify roles and responsibilities with focal points and MDB leads is best practice.
4. **Readiness activities.** Policy reform, capacity building, analysis and awareness raising, etc..
5. **Scaled up, predictable, and flexible resource envelope.** Model where international funding is made certain from the start and paired-up with multi-year country programming budgets. Flexibility in allocation is a key feature, given changing country circumstances.
6. **Strategically linked investments.** A “transformative vision” that unifies multiple interventions, along with a project pipeline for co-finance through International Finance Institutions (IFI).

TrC-Related Questions It can Help Answer

1. Relevance. How can the process of shaping this climate investment best engage local political leadership? What country priorities should it address to maximize long-term commitment? Can they be made to cut across party lines?

2. Relevance. What mix of climate interventions could most strategically unlock potential for low-carbon and/or climate-resilient development in this country/ sector? How can they best harness political and market conditions?

3. Systemic change. How can multi-stakeholder consultation contribute to design? How can it help create conditions for shifting mindsets, behaviors and decisions?

4. Systemic change. How can government leadership (gained through the programmatic approach) be leveraged in order to phase out unsustainable practices and market signals? How can it contribute to climate readiness in this country or market?

5. Scale. How can the phasing of resources within the program, be the most conducive to demonstration, adaptation, and catalytic scale-up?

6. Scale. Can the design process engage stakeholders that will be important for scaling-up this investment in the future? How will their expectations be managed throughout the process?

7. Sustainability. How can local leadership be made to have considerable skin in the game, and thus protect this investment in the face of shifting conditions?

Synergic Relations with Other TMAs

Principles of blended finance: Support an efficient use of concessional resources when utilizing a programmatic approach. They can allow practictioners to critically examine their portfolio of potential projects and a) maximize the transformational potential of the concessional finance available; b) ensure that private sector projects actually have the potential to catalize market development; and c) ensure that projects are commercially viable, which increases their sustainability profile and reduces risks.

Stakeholder engagement: By definition, stakeholder engagement is one of the cornerstones of the programmatic approach, as it is the most efficient means to ensure the complementarity and coordination among actors, as well as the selection of highly-relevant, timely and feasible individual projects towards expected program outcomes.

Theory of change: The TrC potential of the programmatic approach is linked to its capacity to provide a solid theory of change behind targeted transformation. The “transformative vision” will often span across multiple institutions, market segments, and logic chains that must hold up against an objective, value-free set of rationales and assumptions.

Through which MLP-Tactics can it strengthen TrC?

Seize ongoing transformations. Through its multi-sector involvement and mission to build upon existing country-led work, the programmatic approach can be used to identify promising ongoing changes that offer opportunities to elevate climate ambition. These may range from successful exploratory pilots executed by MDBs, to profound structural reform in country government. In all cases, what is important about harnessing these ongoing changes is to do it in a way that deepens country ownership and commitment towards a low carbon and resilient development pathway.

Involve influential agents of change. Because this approach is heavily focused on making country-officials the leaders of change, the programmatic method is well-suited to exert pressure on those who set “the rules of the game”, making them part of the regime shift needed to deliver TrC.

Crowd-in and leverage resources. Due to the resource certainty and convergence that an IP brings to a particular country and sector, the programmatic approach has an inherent capacity to attract further support for expanded climate action. Also, to the extent an IP is developed through local expertise, the leveraging of local resources can be maximized, and thus further sustainability may be brought into the investment.

Articulate problems. As a product of ample multi-stakeholder consultation, the programmatic approach is well geared towards assisting knowledge communities parse out key variables and drivers behind potential transformational change. To the extent possible, this feature must be used to bolster agreements on priorities and actions (preferably through clear, succinct, and powerful data and messages targeted to all types of audiences, maximizing legibility), and involve necessary awareness-raising in order to elevate the probability of garnering support from diverse stakeholders.

An applied example from the Indonesia case study (CTF)

Indonesia's *Private Sector Geothermal Energy Program* was conceived under an investment plan that supported a range of geothermal projects, instead of a single one; furthermore, it introduced flexibility to implement the projects during different time frames. This allowed stakeholders at the Government of Indonesia (GoI), MDBs, financial institutions and local technicians to carry forward lessons from one project to another, generating short learning cycles. According to both the GoI and ADB, the opportunity to work on multiple, consecutive projects allowed them to gain clarity on the standards, needs and feasible benchmarks to scale-up and continue developing geothermal energy. Furthermore, these lessons indirectly influenced regulations and terms of contracts, terms of finance, and informed the ways of assessing and responding to risk in this market.

Takeaway: Use the programmatic approach to create learning-and-adjustment cycles between projects

The programmatic approach may be used to support different alternatives of climate investment within a single sector in order to: a) compare which performed the best and why; b) when staggered, promote more recent projects learn from previous ones and better adjust towards transformation; c) gradually build momentum and sector-led pressure towards shifting established structures that block further progress towards transformation.

An applied example from the Colombia case study (CTF)

Colombia's *Financing Program for the Technological Transformation of Bogota's Integrated Public Transportation System* (SITP) leveraged the know-how and political will developed both at the national and local levels through a series of previous projects within the country's CTF Investment Plan. These elements allowed project designers to intervene in a quick and strategic manner when the opportunity to push for greater climate ambition arose (because of new local regulation that gave local authorities the ability to define the type of bus technology that will operate in each city route).

Takeaway: Harness political will from past projects to identify windows of opportunity within programs

The programmatic approach can be useful in building a tightly-knit ecosystem of actors around a subject matter that may be consequential in quickly identifying promising opportunities for change.

A country or sector program should be designed and phased thinking earlier projects can be geared towards laying the groundwork for later climate interventions.

An applied example from the Lao PDR case study (FIP)

In Lao PDR, the *Protecting Forests for Sustainable Ecosystem Services* (FIP-AF) was a project that heavily built upon existing policies in the country and programs by international finance institutions (e.g. the Greater Mekong Subregion Biodiversity Conservation Corridors Project, led by ADB). During implementation, it has also involved intense multi-stakeholder consultation with other finance institutions such as the European Bank for Reconstruction and Investment, the German Agency for International Cooperation, among others. These links and deep coherence with the surrounding environment, has allowed project activities to place themselves in pre-existing and promising niches. This alignment is helping it seize and reinforce shifts occurring on established practices (e.g. a 2016 ban on logging) and harnessing emergent innovations entering the mainstream (triple-cubesat miniature satellites for monitoring land use change).

Takeaway: Prioritize existing initiatives in order to "act in the right place and at the right time"

Project designers can apply principles from the programmatic approach on specific projects in order to introduce themselves into targeted and potentially transformational dynamics. One of such features is the capacity to build upon previous work and current programs in order to: a) accelerate progress to an already promising transformational goal; and b) increase its own likelihood of TrC by "being at the right place at the right time".

Programmatic Approach in action: an extract of the Investment Plan in the case study from Indonesia (CTF)

IBRD Geothermal Clean Energy Investment Project
Description: the project supports development of two geothermal fields (Ulubelu and Lahendong) with respective capacities of 110 MW and 40 MW. The geothermal resources have been confirmed at both fields and the tendering for the above-ground steam gathering system and power plants are under way. The first disbursements from the CTF loan are expected by year-end 2013.
Rationale: The rationale and expected impacts are the same as envisioned in the CIP; concessional funds are needed to further develop the backlog of geothermal projects under state-owned enterprise (SOE) lead.

ADB Public Sector Geothermal Power Development Program
Description: the ADB Geothermal Power Development Program was intended to finance the construction of 2 public sector geothermal power plants in West Java and Sumatra, with aggregate capacity of 140 MW and related transmission line enhancements.
Rationale: the rationale and expected impacts were the same as envisioned in the CIP; concessional funds are needed to further develop the backlog of geothermal projects under state-owned enterprise (SOE) lead.

ADB Private Sector Geothermal Investment Program
Description: ADB's Private Sector Operations Department (ADB-PSOD) proposed to use CTF cofinancing to support a large geothermal project which was originally identified in the 1990s. The candidate project was initiated in the 1990s, but development was stalled in the aftermath of the financial crisis of the late 1990s. The project has been re-started and is undergoing due diligence by ADB-PSOD. ADB-PSOD is also engaged with several other private sector developers with a potential portfolio of several hundred MW, and is preparing an investment program with up to 750 MW of new geothermal capacity.
Rationale: the rationale and expected impacts are the same as envisioned in the CIP; concessional funds are needed to further develop the backlog of private sector geothermal projects.

IFC Private Sector Geothermal Investment Program
Description: IFC has been requested by GOI to provide advisory services to carry out several competitive geothermal tenders. IFC has maintained dialogue with various private sector developers with a portfolio of 1000 MW of new geothermal capacity.
Rationale: The rationale and expected impacts are the same as envisioned in the CIP: concessional funds are needed to further develop the backlog of private sector geothermal projects.

As explained previously, Indonesia's *Private Sector Geothermal Energy Program* was conceived under the CTF Investment Plan for Indonesia (2010), as part of a larger strategy to support geothermal energy generation across multiple projects. Between 2010 and 2013, national policies and priorities evolved and adjustments to the energy regulatory framework and tariff structure created a more enabling environment for the private sector to invest in geothermal. The programmatic approach allowed the investment plan to adapt to this new context and government priorities, reallocating concessional financing resources to consolidate geothermal energy generation.

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Method

STAKEHOLDER ENGAGEMENT

What Is It and How Does It Work in Practice?

Stakeholder engagement is an umbrella term used to define a range of activities carried out during an investment's life cycle, whose objective is to identify, understand and involve affected and/or interested parties in the design, implementation and monitoring of the investment.

There are different degrees to which a stakeholder engagement can be carried out, according to the role that stakeholders play, the degree of responsibilities they have, the moment of the investment's life cycle in which they participate, the social risk of the investment, among others. The Climate Investment Funds (CIF), for example, recognize three overarching approaches to engaging stakeholders:

• **Facilitation**, through which stakeholders are serviced by dissemination of information in a timely manner, invitations to key meetings, and responses to their inquiries.

• **Consultation**, where the objective is to understand stakeholders' view on the design, operation, monitoring, evaluation, results and impacts of an investment, by bringing them together to discuss their perspectives, concerns, experiences, and lessons.

• **Partnership**, where stakeholders are actively involved in the design, implementation and/or monitoring of the investment.

Both Multilateral Banks (MDBs) and the CIF recognize stakeholder engagement as a key element to ensure the local ownership and sustainability of an investment, since it promotes more transparent and inclusive decision-making processes, it allows project leads to identify and navigate challenges, and increases resource allocation efficiency. In practice, stakeholder engagement was identified across all the projects and programs analyzed with different degrees of involvement, being the most common a consultation during the investment's preparatory phase.

How Does It Operate at the Different Levels of MLP?

At the landscape level, stakeholder engagement should help identify *local values, beliefs* and *views* that could affect the investment's capacity to deliver TrC. Also at this level, consultations will allow the designer to get a glimpse of potential *exogenous shocks* (a shift in the prevailing *political ideology*, a spike in *exchange rates*), in which case getting insights on how to best react to these events, will prepare the investment to weather and seize change. For example, in the face of a hurricane strike, a resilience measure could harness the rise in public awareness; it could do so by having an educational strategy in place and an ongoing engagement with policy leaders in charge of crafting a response, which may strengthen support for the project.

At the regime level, stakeholder engagement should be used to identify the entrenched interests and the *"knowledge routines"* of key stakeholders operating on the basis of *established practices and standards* (the "*incumbents*", which include policy makers, financiers, engineers, suppliers, etc.). This can provide key insights into understanding their core assumptions about how the *regime* works, and what it would take to change their mindsets and will into adopting new technologies or practices. For example, by discovering that local engineers were taught that a given technology promoted by the project is defective, designers may realize it will be necessary to provide dedicated training, or to change the artifact. Also at this level, designers will be able to identify *insider individuals or groups* that are more open to innovation. For example, by partnering with champions in governmental institutions that are willing to advance disruptive projects from within

At the niche level, stakeholder engagement must help identify potential allies *outside of the regime*, build coalitions and boost knowledge-sharing. In fact, according to MLP, *learning processes* –largely supported by stakeholder engagement– are one of the key channels to *align innovations* and *build momentum around a niche.* For example, the active engagement of a wide range of companies spearheading renewable energy storage, would be a way to identify financing and regulatory constraints, explore channels to influence policy makers, and define research and development synergies that can strengthen the business model that this type of technology requires.

Main Components

- **Stakeholder analysis:** Brainstorms in order to identify the main stakeholders related to an investment. Analyses and classifies their relations and degree of affectation or concern over the investment. Its visual representation is a stakeholder map, usually expressed as a Cartesian diagram where core classification criteria are laid out along the x and y axes.

- **Consultation and participation plan:** They lay out the strategy through which stakeholders will be involved, including the modality and methods of the consultation according to the country context, local traditions, objectives of the investment, and relevant stakeholder characteristics. The Plan will define the degree of involvement, the expected outputs, and all information necessary for stakeholders to know how, when and to what purpose the information provided will be utilized. The planning and preparation of these consultations should ensure they are accessible to all groups –which will require appropriate logistics and scheduling –, and that stakeholders understand both the context of the consultations and the role they are expected to play in them.

- **Consultation:** Provides the forum for dialogue, through workshops, meetings, surveys, interviews, among others, as a means for stakeholders to share their insight, interests and proposals.

- **Accountability mechanism:** Establishes channels and procedures through which stakeholders will receive (and can request) follow up on how inputs were or were not incorporated and explain why. This process is critical to maintain credibility and integrity throughout the process.

Sources: CIF, 2019; ADB, 2012; CIF/ ADB, 2013; and IDB Group, 2013.

STAKEHOLDER ENGAGEMENT

TrC-Related Questions That It Can Help Answer

1. Relevance. How will project management engage and manage the expectations of the most important stakeholders to advance a low-carbon or climate-resilient agenda in this country and sector? Which local champions will the investment harness?
2. Relevance. How can direct-beneficiaries best inform the design of interventions? How can they help ensure that design is the best among alternatives, to most strategically deliver low-carbon and/or climate-resilient development?
3. Systemic change. What kind of incentives will make stakeholders more willing or open to deep change? Which key interests should this climate investment tap into, in order to create more favorable conditions for change?
4. Systemic change. How do stakeholders' cultural, religious, historical and political values affect their mindsets, decisions and behaviors in relation to climate change? How will project design incorporate them?
5. Scale. How wide is the spectrum of stakeholders being consulted to design the investment? Can the preferences of users from markets or segments where the investment has potential to scale-up, be considered in project design?
6. Scale and sustainability. Are there any pre-existing stakeholder networks and knowledge-bases that the investment can harness?

Sustainability. How can stakeholder involvement help the investment detect and respond to risks in a timely and resourceful manner?

7. Sustainability. Are there potential detractors with sufficient influence to place this investment at risk? How should they be involved throughout the design and implementation process? Will there be a conflict-resolution strategy to manage them?
8. Sustainability. Does the investment have sufficient local stakeholder buy-in and capacities as to ensure it will remain in operation once external support comes to an end?

Synergic Relations with Other TMAs

Market analyses: By providing the overall context in which the problem is situated, they can prepare the ground for the stakeholder analysis, ensuring that stakeholders from all relevant sectors are considered. They can also allow project designers to fine-tune the questions to include in the consultation, identifying key areas in which information is missing and must be obtained directly from stakeholders.

Risk assessments: They can offer orientation on which key players to involve and to what degree, as a way to increase stakeholder contribution to the sustainability of the investment.

Theory of change: A theory of change provides the backbone for structuring a stakeholder engagement, allowing project designers to focus actors' attention on key areas, avoiding situations where interests and expectations may roam beyond the investments' reach. It can also help identify key stakeholders that must be consulted for verifying that core assumptions are sufficiently strong to realistically aim towards TrC.

Feasibility studies: By generating evidence of the desirability of the investment, feasibility studies can serve as a key input to foster buy-in during stakeholder engagement activities. These tools can also be used simultaneously: As some projects showed, involving stakeholders during the feasibility studies can increase appropriation, support knowledge-sharing and networking, and begin to open up mindsets towards innovative solutions.

Through which MLP-Tactics can it strengthen TrC?

Most tactics laid out in this toolkit can be advanced through stakeholder engagement techniques and methods. The following are put forward as the most salient to investment designers:

Identify and empower promising niches. Stakeholder engagement can help designers identify opportunities which are not visible through desk-based reviews, or that are only known to local populations. Later, it can aid in defining which among competing innovations has the most advantages in addressing systems' barriers, so that designers can focus on helping this alternative hone its configuration towards being mainstreamed. Consultations can also shed light on the requirements that a specific innovation may have in order to be consolidated or mainstreamed.

Articulate problem. By engaging different types of stakeholders, designers can build a wholesome picture of a specific context or situation, understanding contrasting interests, bottlenecks, co-benefits, risks and ideally reaching consensus around pathways through which to address a specific problem.

Crowd-in and leverage resources. Stakeholder engagement can also be useful to identify additional sources of inputs for the investment, including finance, technical assistance and on-the-ground support, among others. Evidence suggests that project and program designs that harness local resources –e.g. knowledge materials, existing training networks– may be conducive to more sustainable outcomes.

Involve influential agents of change. Often times, projects and programs focus on the traditional ecosystem of stakeholders specific to a sector; but a thorough mapping of potential resources and partnerships, may lead to identify non-traditional actors who, if attracted to an investment by using a design that caters to their concerns, can become highly influential in triggering systemic change (e.g. institutional investors in small scale energy efficiency projects).

Support and design with front-runners and first movers. Through engagement, designers can partner up with front-runners and first movers that are actively involved in the sector of the project, by generating opportunities for co-creation, feedback and on occasions shared responsibilities during implementation phases.

Promote inner adoption. An important first step towards shifting mindsets towards transformation, involves getting individuals and organizations to internalize different values and innovations in their own practice, as an intermediate step towards changing entire institutions and societies. Through stakeholder engagement, key stakeholders (e.g. implementation agencies, specific areas within institutions) can be encouraged and trained to champion the societal change that it sought through the investment.

An applied example from the Bolivia case study (PPCR)

The resilience credit that was scaled through the project *Financial Products to Promote Climate Change Resilience* in Bolivia was largely possible due to the inputs and synergies generated by stakeholder engagement. On the one hand, it allowed the implementing agency to access financial support from another local finance institution to carry out the first pilot. On the other, it allowed the project to partner up with a local university and access talented work force at low costs, which translated into lower costs for final credit recipients.

Also, an additional stakeholder consultation was carried out to verify the characteristics of demand by interviewing the target beneficiaries. This allowed the implementing agency to identify the amounts that producers were willing to access in credit, as well as the adaptation measures that were truly of interest to them (only six out of the eighteen initially considered). This was critical to adjust implementation mechanisms and come up with a product that was attractive for end users.

Takeaway: Use stakeholder networks to validate demand and optimize implementation arrangements

Stakeholder engagement can provide the institutional arrangements necessary to see the implementation through, and develop strategic alliances to increase the project's efficiency, resilience and overall capacity to deliver TrC.

Stakeholder engagement can also be critical to validate hypotheses, verify assumptions and understand risks that could derive from local market characteristics, traditions and beliefs.

An applied example from the Indonesia case study (CTF)

The original CTF Investment Plan for Indonesia considered advancing geothermal energy, but also assigned funds to advance other renewable sources in the country. During the design phase of the *Private Sector Geothermal Energy Program,* stakeholders were consulted through collaborative efforts by the International Finance Corporation (IFC) and the Asian Development Bank (ADB). As a result, the Government of Indonesia identified additional opportunities and private sector interest in geothermal energy that exceeded what had been originally estimated. The demonstrative potential of geothermal energy in the country's context, as well as the increased market readiness identified, led to a revision of the investment plan that readjusted funding to concentrate efforts in private sector geothermal energy projects, rather than public sector geothermal projects, or private sector projects focusing on other renewables.

Takeaway: Carry out in-depth private sector consultation to design investments with more TrC potential

Engaging stakeholders can provide valuable feedback at both investment plan and project/program levels, for project designers or government's to better target relevant areas through which to deliver transformational change.

Involving possible investors and entrepreneurs is critical, since it can shed light on low-carbon opportunities that can be undertook by the private sector rather than government, benefiting from the former's larger contribution to the sustainability of the investment.

An applied example from the Tajikistan case study (PPCR)

Tajikistan's Building Climate Resilience in the Pyanj River Basin has leveraged local knowledge and social networks of existing social organizations –such as Water User Associations, *khashar* (mutual self-help groups), *mahala* (neighborhood associations), and women committees–. Through them, project designers identified key needs for a successful implementation of disaster risk prevention activities and validated the feasibility of establishing an early warning system through the provision of training and cellphones. This gave way to the development of Disaster Risk Management Committees (DRMCs) of which 17 have been thus far established. A continued stakeholder engagement has allowed DRMCs to successfully gain commitment from their community.

Takeaway: Make use of existing coordination bodies to meaningfully engage with stakeholders

Meaningful and sustained stakeholder consultations are amongst the most effective means to ensure the right problems are being tackled, and that the solutions proposed to do so will be sustainable over time.

Designers must judge when existing social organizations can be used as mechanisms for implementation; or rather, when these can be leveraged to establish something new but that can be sensible to local rules and understandings for effective coordination.

An applied example from the Tajikistan case study (PPCR)

Another component of *Tajikistan's Building Climate Resilience in the Pyanj River Basin* had to do with implementing a pilot project for drip-irrigation, which was considered a technically relevant solution for dealing with the fact that decreasing water resources often have an impact on neighboring communities. The proposal included a successful stakeholder consultation at the high-level stage, generating buy-in from country officials. However, before starting the investment lacked engagement activities with communities and local governments present in the implementation site. The solutions proposed were not embraced by the communities: they demanded a conventional technology (the reparation of a pumping station) which generated delays in implementation and defeated the purpose of changing resource-intensive practices towards mindful water consumption.

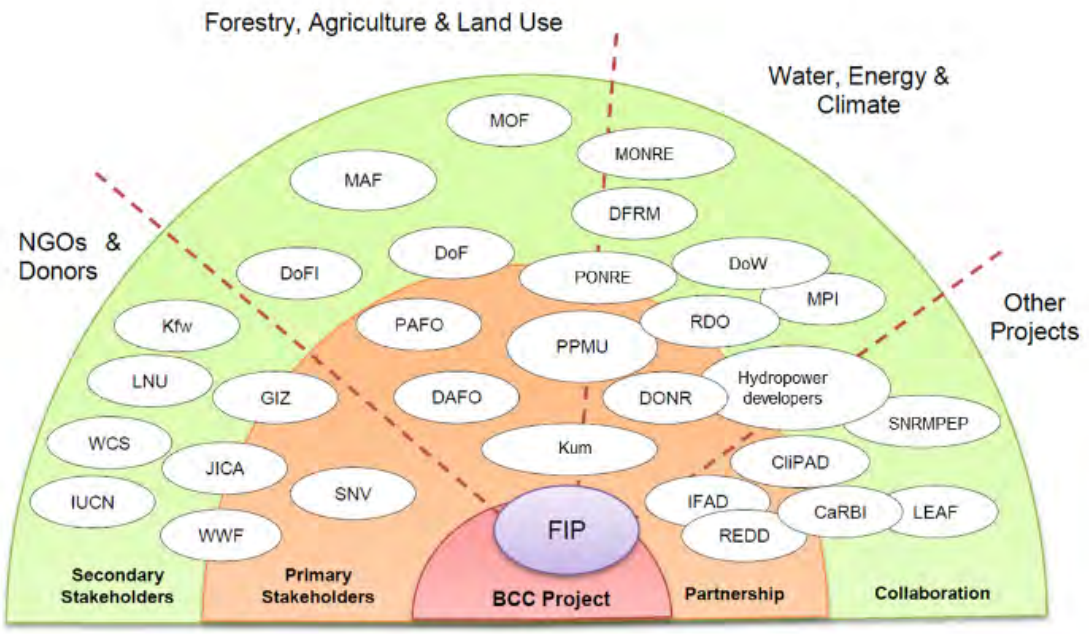
Takeaway: Engage with high-level decision-makers and validate relevance of solutions with end users

Stakeholder consultations must act on a programmatic, high-level arena, in which country government officials and large organizations play key roles in the decision-making processes.

Nonetheless, consultations must also be project-based before implementation begins. Particularly when introducing innovative solutions and practices, engagement must be extended to target communities, identifying local concerns, interests and preferences. This will allow designers to verify whether ideas accepted at the country level, can be successfully implemented at the local one.

This case also shows that, in order to implement what are considered by experts to be technically-relevant solutions, must be made socially-relevant a well.

An Extract of the Stakeholder Mapping in the case study from Lao PDR (FIP)



The Lao PDR feasibility study included a stakeholder analysis that acknowledged the broad range of primary and secondary actors both directly and indirectly involved in the project. These stakeholders were categorized according to target areas and sectors; this and other exercises helped identify opportunities for partnership and collaboration with other projects and with the private sector.

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What Are They and How Do They Work in Practice?

Market analyses focus on identifying the economic sectors and geographies with the highest potential for the development of project-supported enterprises. It allows project designers to establish types of markets; understand the dynamics of competition; identify supply and demand capabilities; evaluate market links (such as value chains or complementary/supplementary markets); detect market drivers, their trends, and their potential to impact project outcomes; map out key market stakeholders (e.g. investors, suppliers, financial intermediaries, including their product portfolios and future plans); identify prices, pricing structures and methods; and obtain input on market segmentation and consumer profiles, among others. (World Bank, 2016)

Market analyses can apply to both public and private-oriented investments (though it may present variations in its components and level of detail/segmentation) and is often used as a way to flesh-out the complexity of the business-development conditions in which a given investment will take place. In practice, MDBs do not always carry out "market analyses" explicitly framed as such, but some of their main components are always found in Sector Assessments, Project Documents and Investment Plans.

How Do They Operate at the Different Levels of MLP?

At the landscape level, market analyses can identify *macro-economic* and *pricing-policy trends or cycles* that can either obstruct transformational change (by making it harder for *niche innovations* to penetrate *a regime*) or exert pressure in favor of it (by opening opportunities to change *established practices)*. For example: a market analysis may indicate a recession as being unsupportive of investment in high-risk technologies; or identify how an international commitment to phase-out fossil subsidies could favor investments in renewable energy.

At the regime level, market analyses can reveal barriers and opportunities closely related to *prevalent conditions* in industry, regulations, technology and preferences (sub-regimes). By dissecting these elements, they can help identify: a) *status-quo* practices or market failures that need to be changed or destabilized in order to allow transformation to happen; and b) *sub-regimes* that are already less stable, where transformative innovations are more likely to flourish. For example: a market analysis may point to market distortions such as high tariffs on energy storage systems as a barrier to achieve full renewable energy potential.

At the niche level, private sector projects and programs often focus on products that will be catapulted into the *regime* through financial support. Market analyses will identify the key constraints and opportunities for them, as well as other complementary and supplementary *niche products,* in order to better inform the means to influence established markets and build momentum around radical innovations.

Main Components

1. **Supply and demand:** Market gaps defined as the difference between the types and amounts of products and services being offered, and the amounts and types of services demanded by consumers.
2. **Policy and regulatory framework:** Current and foreseeable regulations applicable to the target market, as well as any government policy affecting market development (taxes, incentives, prohibitions, campaigns, regulatory vacuums, etc.).
3. **User preferences:** Consumer or target populations' needs and preferences, payment capacities, risk profiles, among others.
4. **Financial profile:** Sources of cost and value, cost stability, pricing strategies and mechanisms, availability and characteristics of finance and suppliers of debt, and potential financial returns.
5. **Technological outlook:** Traditional technologies available in the market, as well as related niche innovations seeking to enter the mainstream.
6. **Subsectors within the given market:** Characteristics of market segmentation, including size, stability, requirements, competitive edges, etc.

Note: In their broadest sense, "Markets" are understood as a place in which goods and services are sold and purchased; as such, this type of assessment is not limited to private sector projects.

Source: developed by C230 with input from World Bank 2016; IDB Group 2011; and IRENA 2016.

Method

MARKET ANALYSES

TrC-Related Questions That They Can Help Answer

1. Relevance. What market is the investment seeking to target? How open to innovation is it? What has been its trajectory in relationship to climate change? What conditions might be necessary to "tip" it into shifting or accelerating towards a low carbon and/or climate resilient trajectory?
2. Relevance. How can the climate investment address gaps or failures in this market? Is now a strategic or ripe time to do so, and why?
3. Relevance, scale and sustainability. Is there a sizable and effective/proven demand in this market for this type of climate investment? How can design make it more likely to be adopted and mainstreamed? Are there context-specific user needs and preferences it should address?
4. Systemic change. What are the main market barriers (as related to policy, regulation, user preferences, technological outlook) that could limit the adoption/mainstreaming of a climate solution in this market?
5. Systemic change. Which are the main market actors? What are their behavior and decision-making patterns in relation to climate change? Will the investment need to shift these patterns, and if so, how can it do this from a market perspective (e.g. changing preferences, reducing risk perceptions, addressing knowledge-gaps etc.)?
6. Scale. What are other potential geographic markets and/or market segments for this type of climate solution? How could design be adapted in order to maximize its probabilities of being adopted elsewhere or by others?
7. Sustainability. Are there elements in the current and foreseeable economic and regulatory policy (e.g. taxes, subsidies, tariffs, prohibitions, etc.) that could jeopardize climate-related efforts in this market?
8. Sustainability. Are there other developments in this market's outlook that may hinder the climate solution's ability to be adopted and mainstreamed?

Synergic Relations with Other TMAs

- **Stakeholder engagement:** Involving stakeholders is key to identify critical information that is often not reflected in hard data, such as influential market players (on grounds others than market share), front-runners and actors willing to innovate, barriers to adopt new proposals, attractiveness of the proposed solutions, and interests in financial support, among others.
- **Feasibility studies:** While a market analysis can help identify the main opportunities, target consumers, allies and requirements to design the specifics of an investment, feasibility studies can verify that the design is technically and financially promising, particularly when some on-the-ground testing is involved.
- **Principles of blended finance:** Can shed light on TrC-related areas that market analyses should cover. These include gathering sufficient information on a) the variables that will determine the commercial sustainability of a proposed solution in the long run (with out the need for concessionality), b) market readiness for catalytic resources to effectively open up the market, and c) identify market failures and institutional arrangements to consider during the development of the proposed solution.

Through which MLP-Tactics can they strengthen TrC?

Support and design with front-runners and first-movers. By identifying market players spearheading the adoption of relevant transformative solutions, market analyses can orient project design and see how to collaborate with key business/initiative-developers in overcoming barriers to alter a given regime. It also has the ability to identify potential synergies among innovators, in which case the project or program can be used to develop and strengthen market linkages, and lobby together for change.

Identify and empower promising niches. A thorough assessment of market characteristics can bring forth the key points through which to strengthen a high-potential niche for low-carbon or adaptation. Examples of this are identifying gaps between supply and demand, understanding consumer interests and ability to pay, linking climate interventions with pressing market failures, aggregating niche-innovations, among others.

Seize ongoing transformations. Transformational changes are seldom derived from a single intervention. The wide scope for a market and sector analysis can identify synergistic efforts carried out at other levels, by other institutions and on different points of entry, including regulatory modifications, technological advancements, financial opportunities, additional low-carbon or adaptation projects, among others.

Involve influential agents of change. An important role of market analyses is to map possible investors and financial intermediaries, whose support may impact the potential to scale a solution and break market-entry barriers. At this stage, project design may benefit from considering ways to incorporate current system incumbents with additional investment capacity as a way to optimize TrC likelihood.

Create adaptive platforms. By thinking of scale and replication from the start, market analyses can be an ideal space from which to brainstorm how the design of a solution proposed for a particular market can be extrapolated or expanded to tackle other markets or segments, and if necessary, adjust the original design to enhance compatibility and adaptation capacity.

An applied example from the Maldives case study (SREP)

Maldives' public-sector program *Preparing Outer Islands for Sustainable Energy Development* derived from a SREP investment plan containing various elements of a market analysis. It identified the policy and sector background, profiled islands according to their electricity demand, identified key barriers and challenges in the sector, and presented technological alternatives that could be deployed to strengthen renewable energy (RE) according to each island's profile. The study was key to identify project pathways appropriate to the market circumstances of each island, and deal with the main constraints limiting RE mainstreaming.

Takeaway: Analyze segments within a market to make solutions relevant to context-specific conditions

Market analyses can operate effectively at programmatic levels, generating the key inputs to better define an appropriate combination of projects to tackle all relevant barriers considered necessary to achieve transformative outcomes. They can help define regional markets or subsectors in which innovative solutions can be more effective, while tailoring them to fit context-specific needs.

An applied example from the Bolivia case study (PPCR)

The cornerstone of the design for the PPCR project *Financial Products to Promote Climate Change Resilience in Bolivia* was a market analysis. It identified the environmental hazards affecting target populations as well as their capacity to access finance, the regulatory framework in which the product would operate, and the penetration of competitors in regional submarkets, among other elements. As a result, the market analysis proposed a set of resilience measures that could be supported by the financial product, which was then validated through feasibility study that involved a stakeholder consultation to identify the measures that were more appealing to target recipients, as well as the amount these were willing to invest to adopt the measures.

Takeaway: Combine market, feasibility and stakeholder studies to increase the relevance of design

Market analyses can benefit significantly from combining hard, data-driven inputs with soft, qualitative consultations to ensure products are capable of addressing climate problems in ways that are attractive, compatible with idiosyncrasies, and adjusted to available resources.

An applied example from the Mexico case study (CTF)

The CTF project *Capital Markets Solution for Energy Efficiency Financing* included a market analysis through which it identified the predominant characteristics of the Energy Efficiency (EE) market in Mexico. Its scope ranged from institution mapping to analysis of demand, and from financial barriers to possible subsectors in which to focus. The analysis found that the key market barrier to tackle was that the risk profile of small-scale projects and the companies able to implement them was not always aligned with the risk-profile requested by traditional financial institutions. As a result, the project focused on creating a new financial mechanism based on project aggregation and a risk-sharing guarantee. By focusing the project on the key market barriers, the market analysis helped design be relevant and adequate towards achieving systemic change.

Takeaway: Clearly lay out the barriers directly tackled by the solution and map residual barriers

Projects with transformational ambitions benefit from ensuring that the proposed design tackles at least one core market failure or barrier; and that once the solution has overcome it, no overseen market elements will deter implementation.

An applied example from the Mexico case study (CTF)

Another key element of the market analysis carried out for Mexico's *Capital Markets Solution for Energy Efficiency Financing* was its identification of sub-sectors where EE projects would be most attractive (e.g. cogeneration). The dynamic mapping of these sub-sectors -through continued stakeholder consultation- allowed project designers to question themselves from the start on the type of characteristics that the product should have to ease future scaling and replication. This led them to develop a flexible platform capable of adapting to multiple segments (e.g. transportation, ceramics, public buildings).

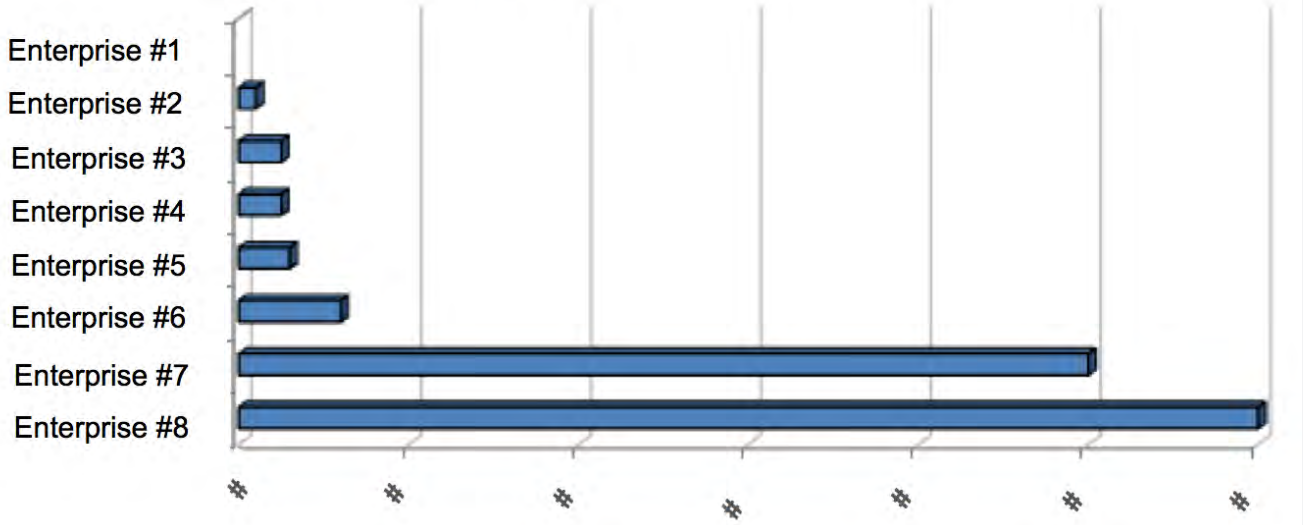
Takeaway: Explore related market linkages with a forward-looking strategy to scale

Particularly for private sector projects in which a product (financial or other) will be placed on the market, an analysis capable of exploring related markets or subsectors can offer an upper hand in terms of future scale, as well as the possibility to tweak the original design to better prepare the project for replication or expansion.

TMA in action: an extract of the market analysis from Mexico (CTF) case study

Number of projects carried out and business volume

The following graph summarizes the number of projects carried out per year for the companies that shared this information. The distribution is quite unbalanced.



Note: This is a graph taken from the original report, from which confidential information has been removed.

The market analysis included in Mexico's *Capital Markets Solution for Energy Efficiency Financing* offers a good example of the width that this method can have. It mapped out relevant institutions, user preferences, available technologies, financial constraints and international best practices used to overcome them, and sub-sector profiles that could fit into the projects' scope. (Creara International, 2013)

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What Are They and How DoThey Work in Practice?

The purpose of a risk assessment is to identify events or factors that could negatively impact an investment, the characteristics of potential hazards (their probability and severity), and the level of vulnerability and exposure to the given hazards (Dickson, et. al., 2012, p. 21). Once these have been understood, a risk management plan can be developed to address them, by establishing measures to prevent the occurrence of the risk and/or attenuate its potential impact should it occur.

Risk management plans may also analyze other elements, such as: the likelihood and severity of a risk after mitigation measures have been implemented; the people or institutions responsible for implementing each mitigation measure; risk mitigation objectives, and monitoring mechanisms.

In practice, project designers firstly carry out risk assessments and management plans related to the overall investment that are general in nature; as the intervention is further defined, specific assessments will be developed for financial, disaster, and climate-specific risks, for which MDBs have specific methodologies and guiding documents (for some examples, please see "References"). This Guiding Sheet refers mainly to the former: investment-related risk assessments and management plans that should ideally address political, macroeconomic, policy-related, technology and operational risks (please refer to "Table 1: Types of Investment Risks" on page 4 of this Guiding Sheet for a description of these types of risks).

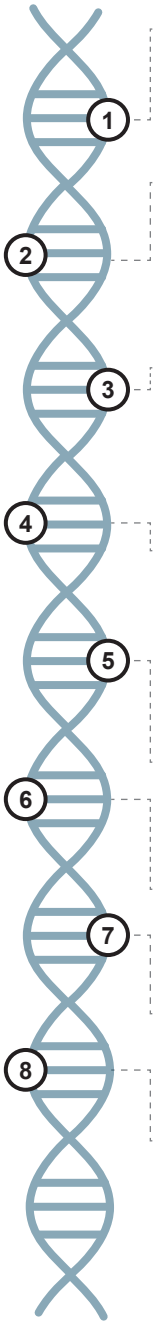
How Do They Operate at the Different Levels of MLP?

The assessment of dynamics at the landscape level is particularly aided by risk assessments: since elements at such a level cannot be controlled by a project or program designer, often the best she/he can do is anticipate possible eventualities and prepare suitable responses, so as to reinforce the investment's sustainability. Risks at this level can include variations in the *international prices* of key inputs, *political and economic crises, shifts in ideology,* among others. ("Table 1: Types of Investment Risks" on page 4 of this Guiding Sheet provides a list of risks that designers should consider when analyzing elements at the landscape level).

At the regime level, projects and programs should be able to scan all *arenas* or *sub-regimes* (technology, culture, science, markets, industry and policy) in order to identify the most salient risks threatening the intervention. Available resources and time frames sometimes can limit project designers from addressing all risks, but a systematic effort to identify them is critical to define those that are worth tackling. Some of these risks include changes in regulation, in political parties, in market actors and trends, etc.

Risks at the niche level can be harder to identify, but projects should be mindful of foreseeable technological breakthroughs, promising *niche actors* or companies that may support or compete with the intended intervention, etc.

Main Components



1. **Description of risk:** Explanation of the risk that may affect the project's implementation or sustainability. Includes the source and possible hazards that could result from the event.
2. **Likelihood of occurrence:** How probable it is that the event will happen. Usually defined within a three or five-level gradient (low, medium, high; or very low, low, medium, high, very high).
3. **Level of severity:** How significant will the risk's consequences be for the project's implementation or sustainability. Tends to be defined within the same three or five level gradient.
4. **Actions to mitigate/manage risk:** Establishes the measures that will be taken in order to reduce the risk's likelihood of occurrence and/or level of severity. Should define expected outcomes, the organization or person responsible, and implementation timeframe.
5. **Mitigation/management costs*:** Estimated costs and/or requirements of the response to the risk, should it occur.
6. **Indicators and monitoring*:** Targets and mechanisms to monitor the implementation and results of each mitigation/management action.
7. **Residual likelihood of occurrence*:** How probable is the risk of occurring after the mitigation measures have been implemented.
8. **Residual level of severity*:** How significant will the risk's consequences be once management measures have been adopted.

*These elements are optional, their application will depend on the level of complexity sought.

Note: The assessment of risks is part of standard procedures by both ADB and IDB Group project and program preparation, each with its own particularities and thematic variations. The elements shown here seek to systematize what has been observed in practice, and further break down key analytical components identified through literature review. Source: developed by C230 with input from ISO Guide 73 (2009).

Tool

RISK ASSESSMENTS AND RISK MANAGEMENT

TrC-Related Questions That They Can Help Answer

1. Relevance and sustainability. Is it likely that the policy priorities to which this investment responds, will shift in the medium to long term? How can the design of the investment respond to political risks?

2. Systemic change. Do risks (or perceptions of risk) related to this investment stem from conventional beliefs, behaviors and decision-making criteria? Could the design of the investment seek to shift them, and if so, how?

3. Systemic change. Will the investment have an impact on interest groups that could place it at risk? What measures could help neutralize/convert their position?

4. Scale. How can the understanding of risk inform the size and the phasing of this climate investment? How can a scaling-up strategy manage risk and perceptions around it?

5. Scale. Do the costs of potential risks and of risk-mitigation measures have an impact on the potential for expansion? Could they be lowered through time?

6. Sustainability. What exogenous political, macroeconomic, policy-related, technological or operational risks (see Table 1: Types of Investment Risks on page 4) are there? Is there a management plan to address the most likely/ severe of them?

7. Sustainability. Which local partnerships and contingency resources could be leveraged if financial, economic, environmental, sociopolitical or physical conditions change?

8. Sustainability. What are the foreseeable risks at the niche, regime and landscape levels for this investment? How are they likely to impact the ability to achieve long term sustainability (e.g. beyond the repayment period)? How can they be managed?

Synergic Relations with Other TMAs

Stakeholder engagement: Consulting sector and country experts can improve a project designer's capacity to identify risks and verify whether certain mitigation/management measures are feasible and effective to counter them. Local insight is paramount to address assumptions that could increase risks.

Feasibility studies and market analyses: These can effectively shed light on technical and market factors (such as market trends, consumer profiles, regulatory shifts, etc.) whose variations could call for re-strategizing or additional mitigation measures.

Theory of change: Any rationale chain can benefit significantly from identifying assumptions and risks present at each causal connection between elements. In this sense, when using tools such as a Theory of change (or LogFrame, or Logic Model, etc.) it is advisable to be explicit about the assumptions implied from one causal chain link to the next.

Through which MLP-Tactics can they strengthen TrC?

Seize ongoing transformations. Risk assessments and risk management plans are the main tool available for project designers to prepare for shifts, at all levels of MLP. This builds projects' and programs' capacity to avoid, resist or manage future events, adding to their overall sustainability and potential. It must be borne in mind that some risks may become opportunities to push MLP dynamics in favor of a transformational project (e.g. use a spike in oil prices, or changes in political party, to bolster support for a renewable energy project); in this regard, risk assessments may also consider including key opportunities that may be opened up due to changes in the context surrounding an intervention.

Build evidence and credibility. By identifying the risks of an intervention, project designers can take measures to manage expectations around particularly risky and disruptive projects (perhaps opting for controlled pilots before scaling-up). In this sense, the timely use of this TMA can shield the reputation of institutions, practices and technologies involved in the investment (for example, by making key stakeholders aware that a geothermal project carries risk, but an unsuccessful exploration drilling cannot speak to the potential of geothermal energy as a whole).

An applied example from the Colombia case study (CTF)

Colombia's *Financing Program for the Technological Transformation of Bogota's Integrated Public Transportation System* was conceived during the Country's 2010 CTF Investment Plan (IP). The IP included a risk management plan which identified risks in seven arenas (from policy and regulatory framework, to procurement).

The assessment identified the risk of bus operators opposing the program. To address it, the program incorporated consultation processes, and IDB Group decided to fund a Test Program in different cities in Latin America (including Bogotá), which brought clean technologies and their manufacturers closer to bus operators in the region. This was critical to open up operators to the idea of adopting clean technologies.

Takeaway: Scan for risk in all arenas and act preemptively to address concerns of potential detractors

Risk assessments can begin with a structured set of topics in which to look for possible risks. This systematic approach can add thoroughness to the risk identification process, using a "full scan" that covers elements at the landscape, regime and niche levels.
Once identified, risks can look outside of the project or program's direct area of influence, in order to find mitigation measures and hinge on other projects within the same investment plan or MDB activity in the country.

An applied example from the Bolivia case study (PPCR)

Financial Products to Promote Climate Change Resilience in Bolivia is a scaling-up operation of a previous project (EcoMicro), which included a risk management plan from the beginning. The risk assessment identified a regulatory risk derived from the approval of a new financial services law which could threaten the sustainability of the financial product that the project sought to expand. Identifying this risk was valuable and allowed implementers to keep this element on the foreground; however, the mitigation measures drafted were limited to address the short-term financial needs of the project, rather than including measures to strengthen the financial product's survival after project implementation. Not making explicit the risk's high likelihood of occurrence, nor its long-term residual severity, may have contributed to the lack of more robust mitigation/management measures.

Takeaway: Manage severe risks with high probabilities of occurrence with comprehensive planning

Risk assessments can be valuable in and of themselves; however, their main contribution of thinking about risks comes from the definition of actions to mitigate and manage them. Knowing how much of the risk can be mitigated and how significant an impact it can have on a project's survival is key to identifying the level of effort worth putting into additional measures. Also, long term sustainability requires risk management plans to go beyond the financial characteristics of the project (related to the repayment of the loan) and focus on the project's long-term operative survival and scaling up.

Table 1: Types of Investment Risks

Landscape Level	Political Risks
	Violence/ instability
	Expropriation
	Convertibility (lack of leadership in the implementation of exchange controls)
	Breach of contract
	Macroeconomic Risks
	Commodity prices / economic conditions
	Currency and interest rate volatility
	Financing (limited depth of domestic financial markets and/or lack of financial regulation)
Regime Level	Policy-Related Risks (Regime Level)
	Policy (Legislative or Regulatory) Changes
	Policy Inconsistency (discrepancy in policy across geographies)
Niche Level	Technology and Operational Risks (Niche Level)
	Performance-related
	Obsolescence
	New market financing (for unproven technologies)
	Operational-related (permitting, compliance, labor, and physical risks)
	Infrastructure–related (insufficient or unreliable supporting infrastructure)

Note: This is an indicative list and is not meant to be exhaustive. Additional types of risk according to the transformational change framework may include financial, economic, and climate.

Source: WRI (2012) with information from UNEP (2009), Standard & Poor (2011), ODI (2011), McKinsey (2010). The original source proposes financial mechanisms to address these risks such as guarantees, local currency loans/facilities and guarantees, interest rate swaps, concessional and flexible finance, lines of credits, and aggregation structures product vehicles, among others. See: WRI (2012): "Moving the Fulcrum: A Primer on Public Climate Financing Instruments Used to Leverage Private Capital". Working Paper by Shally Venugopal and Aman Srivastava. 36pp

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Method

ECONOMIC ANALYSES

What Are They and How Do They Work in Practice?

"Project economic analyses aim to ensure that scarce resources are allocated efficiently, and investment brings benefits to a country, raising the welfare of its citizens." (ADB, 2017, p.1) This kind of assessment seeks to determine whether a project meets three conditions: 1) it represents the least-cost or most efficient option to achieve the intended outcomes; 2) it generates an economic surplus above its opportunity cost; and 3) it has sufficient funds for a successful operation and maintenance.

There are different tools available to carry out economic analyses:

- **Cost-benefit analysis (CBA):** Compares discounted flows of benefits and costs over a prescribed time horizon, using *money* as the common quantitative unit for comparison.
- **Cost-effectiveness analysis:** Calculates a ratio of cost to a specific measure of impact. It can be a useful indicator where a CBA cannot be used to establish a monetary value for project output.
- **Multi-criteria analysis:** Defines a series of criteria in which projects are expected to deliver outcomes; it then assigns weights to each and compares project alternatives based on their effectiveness to reach results.
- **Grant equivalent analysis:** Compares project alternatives on the basis of the amount of concessional finance needed vis-à-vis the expected benefits.

In practice, Multilateral Development Banks (MDBs) tend to favor comprehensive economic analyses over more simplistic alternatives. For example, ADB's policy requires projects to distribute benefits and costs in a way consistent with its intended development objectives, and to internalize their environmental effects. Similarly, IDB Group's directives establish that projects with potential environmental impacts must include both an Environmental Impact Assessment, and a comprehensive cost-benefit analysis that internalizes them. For private sector projects, IDB Group tends to prefer grant equivalent analyses.

How Do They Operate at the Different Levels of MLP?

At the landscape level, economic analysis should properly account for key *macroeconomic* conditions, such as the prices of key inputs (e.g. steel) and competing resources (e.g. oil) using sensitivity analyses to test their possible impact on the investment. Furthermore, economic analyses could be used to reveal *societal and institutional idiosyncrasies* around "what has value". Placing stronger weights on benefits for vulnerable populations, or setting a particular discount rate, also have ethical implications . Economic analyses may provide a space to open a dialogue about how these value systems relate to a climate investment, as a first step towards changing attitudes and decision-making rationales

At the regime level, economic analyses must provide information to gain support from stakeholders *inside established institutions,* by providing them with evidence that demonstrates how phasing out traditional practices and technologies, can allow a more efficient use of resources. For example, by comparing the cashflows of diesel-based power plants, versus expected cashflows form renewable energy generation systems. Economic analyses should demonstrate how benefits are expected to rise because of *improved rules and practices* (e.g. greater household water-efficiency and savings from rainwater collection systems once water tariffs are adequately established and collected)

At the niche level, economic analyses will be useful to the extent they can credibly and integrally account for all benefits generated by climate change *innovations*. They should play a critical role in *comparing innovations* that tackle similar outcomes, in order to establish a dominant business model that can be advanced into *substituting established practices.*

Main Components

1. **Demand analysis.** Existing and future demand for goods and services that will be produced by the project. Provides the basis for estimating economic benefits.
2. **Alternative analysis.** Comparison of the proposed project with a no-project scenario and feasible alternatives, to ensure it is the most efficient option among those available.
3. **Sustainability analysis.** Evaluation of the financial and institutional capacity of the project to sustain its economic benefits over time, already accounting for costs and measures derived from addressing environmental impacts. It includes financial evaluations of both the project and the executing/ implementing entity.
4. **Sensitivity analysis.** Assessment of the impact on intended outcomes that would derive from a change in the values of the project's parameters.
5. **Distribution analysis.** Analysis of how different stakeholders will be affected by the costs and benefits derived from the project, to ensure no disproportional burdens are placed on any group.
6. **Level of concessionality.** Difference between the cost of financing the project at market value, and the cost with concessional finance (debt, guarantees, grants, etc.).

Note: Other elements used by MDBs in economic analyses include country context analysis, sector analysis, and rationale for public involvement, which can often be covered through other tools, such as a market analysis. Sources: ADB, 2017; Dixon, 2012; and Scott, 2017.

Method

ECONOMIC ANALYSES

TrC-Related Questions That They Can Help Answer

1. Relevance. Which benefits and co-benefits constitute a priority in the context of the national agenda? Do these metrics perform well in the project's overall economic analysis? Can they be improved?

2. Relevance. How flexible is the "business case" (benefits vs. costs) for this climate solution? How sensitive is it to changes in its parameters? How could it be better prepared to withstand future changes/adaptations?

3. Relevance. Do climate-related benefits from the selected solution outperform those of comparable alternatives? How can they be boosted?

4. Systemic change. Are there data gaps, knowledge barriers and/or information asymmetries that must be addressed in order to properly account for the intended transformational outcomes of the investment?

5. Systemic change. Are costs and benefits of the investment conclusive enough to change decisions and behaviors? Would boosting the cost-benefit ratio increase the likelihood of shifting mindsets? Could project design achieve this?

6. Scale. How are cost curves expected to evolve over time? Are they likely to show economies of scale? Can benefits be made to expand more rapidly in time?

7. Sustainability. Does the sustainability analysis indicate financial and institutional capacity to sustain benefits over time? How can arrangements and capacities be bolstered to better manage external shocks?

8. Sustainability. Does the distribution analysis confirm that there are no disproportionately large costs for any group? How can costs be managed to minimize potential opposition?

Synergic Relations with Other TMAs

Feasibility studies. Feasibility studies can provide necessary evidence to fine-tune economic analyses and produce accurate comparisons among alternatives; the more they feed from hard data that is specific to the context, the more likely that economic calculations will be credible and persuasive to local stakeholders. In turn, the economic analysis will provide key inputs to inform the institutional arrangements required for implementation, which are often laid out in feasibility studies.

Market analyses. Many elements that set the basis for an economic comparison of alternatives (such as demand analysis, pricing trends) can be provided by market analyses. These can help project designers identify market niches, competing practices or products, and factors on a wider spectrum that could modify the investment's expected costs and benefits.

Principles of blended finance. Economic analyses can build on the principle of minimum concessionality to compare between alternatives based on the amount of concessional finance needed to see them through. This can add an extra layer of analysis to economic analysis variants, allowing MDBs to make better decisions regarding the use of limited concessional resources.

Through which MLP-Tactics can they strengthen TrC?

Build evidence and issue linkage. Economic analyses use hard data to demonstrate the advantages and returns of an investment, and to compare it to alternatives. In doing so, they generate powerful information required to inject credibility into the project and to potentially gain buy-in from key stakeholders. The clearer the explanation of financial and non-financial impacts salient to the communities involved (e.g. foregone profit vs. improvements on air quality and health), the more likely it will contribute to making the investment relevant to the country or sector context, gaining the public interest, and increasing momentum around it.

Articulate problem. Climate investments tend to involve highly complex operations, with both positive and negative impacts in various arenas and moments in time; this can often lead to piece-meal or parochial discussions about the convenience of a solution, which can delay change and water-down support. Economic Analyses provide a useful platform to cohesively integrate all the impacts of the intervention regardless of them being short-term financial or long-term environmental– and assess their overall contribution for society (net balance).

Challenge established technologies and practices. Economic analyses can be used to prove that niche innovations outperform established practices or technologies, which in turn can help change mindsets and stop inertial decision-making.

Identify and empower promising niches. By comparing similar alternatives on different grounds, economic analyses may be used to reveal which among competing innovations may have the strongest characteristics and potential to break into established practices.

An applied example from the Colombia case study (CTF)

Colombia's *Financing Program for the Technological Transformation of Bogota's Integrated Public Transportation System* (SITP) commissioned an economic analysis to identify a) the costs and benefits of the adoption of the SITP vs a no project scenario, and b) the costs and benefits of adopting hybrid, electric or hybrid and electric buses, both for a pilot fleet and the entire fleet. The study demonstrated the economic viability of both SITP and the adoption of clean technology buses, from a comprehensive approach that included quantifiable elements expressed as currency (infrastructure, training, bus procurement, CO2 emissions, particulate matter reduction, among others) and acknowledged those that were difficult to translate to monetary values (noise reduction, impact of vehicle weight on pavement deterioration).

Takeaway: Compare alternatives to calibrate critical factors necessary for stakeholder buy-in

Economic analyses are useful to conceptually measure multiple technological alternatives and different deployment strategies against each other. This will allow decision-makers to find the right balance between the ambition to exert transformational change, the capacity to deliver short-term benefits and the current financial capabilities of investors, which are all key concerns for viable implementation.

Also, economic analyses cannot always translate potential benefits and damages to a single common currency. It is nonetheless still possible to assertively communicate all impacts of the project, to the benefit of gaining buy-in from key stakeholders. A clear recognition of the limitations of accounting methods can bring further credibility to the investment and help lay out a strategy to fill-in knowledge gaps.

An applied example from the Maldives case study (SREP)

Maldives' *Preparing Outer Islands for Sustainable Energy Development* included an economic analysis of each of the five pilot islands selected for project implementation. Based on learnings from past projects, designers acknowledged the need to assess monetary savings potential stemming from both new RE generation, and from more efficient diesel-generation equipment; in a final step, it linked them to the contribution this would make to energy security.

These studies were able to communicate the cost-effectiveness of looking holistically at energy systems, setting them apart from past initiatives that were siloed on renewable potential only. This approach generated information that was of interest to stakeholders that had been opposed to RE in the past, contributing to change attitudes towards RE investment.

Takeaway: Communicate benefits using indicators tha are most salient to actors

Economic analyses can be used to identify the interdependencies between current practices and technologies, and the change that a climate investment is aiming for, in order to design solutions that can create synergies towards the desired outcome.

They are also particularly apt for quantifying the impact that climate action can have on economic and even political issues relevant to a country or sector. Therefore, their strategic use can result in increased stakeholder buy-in, particularly when they use metrics that are aligned to issues already high in the priorities of a given agenda.

An applied example from the Mexico case study (CTF)

Mexico's *Capital Markets Solution for Energy Efficiency (EE) Financing*, addressed a business environment where the lack of historical data on the savings from small-scale EE projects contributed to uncertainty and lack of interest from potential investors. In response, part of the project's rationale has been to place these small-scale EE projects in capital markets, where they will be reporting on their technical and economic performance on a daily basis and in a way that is open to public scrutiny.

Since all individual EE projects financed by the project have included economic analyses, it is expected that the comparison between expected benefits and actual outcomes, will allow this project to play an important role in demonstrating the profitability of small scale RE projects through time, likely to set a precedent for further action in the market.

Takeaway: When innovating, make data generation for economic analysis a built-in feature of design

Climate investments can sometimes have difficulties in presenting robust information about their potential impact, due to the lack of precedents and referents that can be validly extrapolated within the economic analysis.
In this sense, particularly innovative climate investments may consider establishing a platform or mechanism that can continually generate and disseminate evidence of their economic viability and benefits, thus paving the way for future replications or scaling.

TMA in action: an extract of the economic analysis in the case study from Maldives (SREP)

Table 3: Economic Returns and Benefit–Cost Ratios of Sample Island Subprojects

Sample	EIRR %	NPV (Benefits)	NPV (Costs)	Benefit–Cost Ratio
S. Addu	40.17	95.33	84.02	1.13
B. Goidhoo	14.00	2.24	2.12	1.06
Th. Buruni	28.89	2.22	1.59	1.40
Ga. Vilingili	19.19	12.66	11.75	1.08
Lh. Khurendhoo	23.85	5.06	3.98	1.27
Combined sample	31.32	117.51	103.46	1.14

EIRR = economic internal rate of return, NPV = net present value.

This table summarizes the cost-benefit ratios of the five pilot islands considered in Maldives' *Preparing Outer Islands for Sustainable Energy Development Project,* as explained in the previous section. The costs and benefits presented summarize all those derived from installation and generation of RE through solar PV, as well as the increased efficiency from the installed energy grid and the diesel-based generation plants that provide the baseload power for the system. This allows designers, government officials and other stakeholders to easily identify the economic outputs of each subproject, as well as the overall convenience of the investment as a whole.

Source: ADB (2013). Economic Analysis for Preparing Outer Islands for Sustainable Energy Development. Manila, Philippines.

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Tool

PREFEASIBILITY AND FEASIBILITY STUDIES

What Are They and How Do They Work in Practice?

Pre-feasibility and feasibility studies provide technical, economic, and financial assessments required to verify the viability and attractiveness of an investment.

Pre-feasibility studies seek to establish whether a) possible alternatives of design for a project have been examined; b) there are any negative aspects that may seriously compromise its completion; c) available information suggests financial attractiveness; d) there is justification for a full-blown feasibility study.

Feasibility studies are more complex than the former, and offer a more detailed assessment to inform the decision to finance an investment. Depending on their robustness, they will fulfill the following specific functions: a) testing – prove technical workings; b) positioning – identify the intervention within its given market; c) forecasting – anticipate how it will evolve along the investment period. (Loan, 2010).

In practice, technical assessments may include specific variables relevant to the type of project, such as legal, environmental and gender-related impacts, as well as important considerations for the institutional arrangements needed for implementation. Once the feasibility study is completed, the project implementer must have all necessary information to decide whether or not the project should be executed, and adjust the final aspects of its design.

How Do They Operate at the Different Levels of MLP?

At landscape level, feasibility studies should identify key inputs and market trends beyond the control of the project, which may impact the financial viability of the investment. For example, the impact of international oil prices for a renewable energy project that will compete with thermoelectric generators.

At regime level, they should compare the proposed solution with *established technological/cultural alternatives,* and assess whether policy and markets are enabling factors for the proposed intervention to compete. For example, by comparing solar PV performance with established thermoelectric generators.

At niche level, they must help demonstrate how this project or innovation is viable and competitive – in terms of its financial and technical performance, and position it relative to other *niche innovations* that may be complementary (+) or supplementary (-). For example, by comparing solar PV with a biogas installation.

Main Components

Financial characteristics

Overall costs of project implementation (upfront investment and maintenance), resource availability, concessional finance requirements, internal rate of return, etc. May include a cost-benefit or cost-effectiveness analysis (sometimes accompanied by a sensitivity analysis).

Technological solutions

Technological alternatives considered for project implementation, including their main characteristics, requirements, inputs and potency; for example, different layouts and installations for a solar PV project, considering the option of adding batteries for energy storage.

Project operation

Specifics on project implementation, including lines of command, organizational charts, necessary time frames, implementation roadmaps, among others

Institutional arrangements

Partnerships, agencies, taskforces, committees, among other organizational links necessary for project implementation and monitoring.

Legal requirements

Regulatory framework applicable to the investment, including legal procedures at design and implementation phases; it may suggest opportunities for regulatory improvement.

Market profil

Level of market readiness of technologies and practices to be introduced by the investment. Should identify commercial barriers, market players, expected demand, and other characteristics relevant for markets to adopt them.

Stakeholder analysis

Identification of stakeholders relevant to the project, their level of influence and interest, relationships among them. Note: this is generally absent from studies with a strict technical focus.

Tool

PREFEASIBILITY AND FEASIBILITY STUDIES

TrC-Related Questions That They Can Help Answer

1. Relevance. When compared to alternative climate investments in this market, how can this technical and financial solution outperform them? How can it be more strategic in tackling the most important challenges of low carbon and/or resilient development?

2. Relevance. In what ways can the technical features and institutional arrangements of this investment be better aligned to current country priorities and policy frameworks? Can these features be flexible to adapt to changing priorities and circumstances?

3. Systemic Change. How can the institutional/operational arrangements of the investment contribute to shift mindsets around this climate solution, particularly from potential detractors?

4. Systemic Change. Are there financial or technical features that generate skepticism and/or perceptions of risk around the benefits of this climate solution? How could test-runs and other demonstrative activities most effectively address them?

5. Scale. What are the main differentiating factors across potential submarkets for this solution? Would it be possible to tailor the investment's design to best suit them? (e.g. design a variation of the climate solution for different market/user typologies)

6. Scale. How should this investment's technical and institutional arrangements be designed, so that it is likely to be replicated in additional geographies, submarkets or sectors in the future? What would be the minimum requirements (e.g. resources, installed capacities) in order to realistically attempt this?

7. Scale. Does the investment involve a potential technological/financial breakthrough? How can it have the maximum demonstrative effect on others?

8. Sustainability. What will be the operational needs of the investment in the long term? How can this investment provide proof of long-term operational soundness?

9. Sustainability. How can the institutional arrangements address the need for resiliency to potential shocks (financial, economic, environmental, socio-political and physical)?

Synergic Relations with Other TMAs

- **Risk assessment:** Viability of a project can consider risks during the implementation phase, to significantly increase a project's overall potential for success.
- **Stakeholder engagement:** Feasibility studies can be desk-based, but they can also include pilot testing and participatory activities that engage stakeholders and allow them to verify first-hand the potential of the intervention. This can ensure that technologies or practices are tested under "real and local conditions", boosting the demonstrative effect of the studies.
- **Economic analyses:** Feasibility studies tend to include calculations of costs and benefits of project implementation, but unlike Economic analyses, these are not necessarily compared with a no-project scenario and/or other alternative scenarios. By including a formal "Economic analyses", feasibility studies can offer additional insight into the relevance of the intervention, both for the project at stake as well as additional projects that could follow.
- **Market analysis:** As a previous analysis, market analysis can help finetune the elements to be considered during the feasibility study (particularly when multiple feasibility studies will be carried out for different projects within a single program).

Through which MLP-Tactics can they strengthen TrC?

Create adaptive platforms. Given the fact that pre-feasibility and feasibility studies lay out the investment's general operational chart and institutional arrangements, they provide a space for designers to ensure constant monitoring is carried out in technical aspects of the project, and provide appropriate channels to quickly feed back into management decision bodies. This can boost adaptability, allowing implementers to promptly adjust design in the face of changing circumstances.

Identify and empower promising niches. When executed and disseminated with support of an influential actor –e.g. MDB-feasibility studies with positive outcomes can provide a "proof-of-concept" that has multiplying effects for ideas and entrepreneurs that could otherwise have a difficult time breaking through established markets and practices.

Build evidence and enhance credibility. By including experiments and data tailored to the local context, feasibility studies can offer relatable examples of the impacts brought by a given low carbon or resilience solution, thus reducing perceptions of risk in the local market and inspiring further change. Also, to the degree that feasibility studies can provide clear, legible and synthetic technical proof of their comparative advantage vis à vis the status quo or established alternatives, the more useful they will become for persuading incumbents to: a) challenge conventional solutions; and b) address a problem previously unattended.

An applied example from the Honduras case study (SREP)

The *Honduras Self-Supply Renewable Energy (RE) Program* used CIF funds to support the private sector with project-by-project feasibility studies that tested the potential of RE adoption. Through these studies, IDB Group proved the financial viability of different RE alternatives in Honduras (mainly solar PV), which led to two demonstrative projects carried out with IDB Group funding. As a result, the Program generated the evidence necessary to back a larger mentality shift in the Honduran market regarding the risk and profitability of investments in RE, which was one of the main constraints limiting RE adoption at a larger scale.

Takeaway: Use studies to tackle uncertainty and give a final push to first movers

Feasibility studies can be a useful tool to tackle markets in which uncertainty and lack of evidence are limiting private sector investment in low carbon or adaptation measures. Project-by-project feasibility studies (possible with CIF funds) can give the final push to first movers, who are willing to invest in demonstrative projects with potential for scale, and that can prove they are sustainable from a technical and financial perspective.

An applied example from the Maldives case study (SREP)

Maldives' *Preparing Outer Islands for Sustainable Energy Development Program* carried out feasibility studies for five pilot RE projects, which were selected to represent three possible typologies of design solutions, depending on the baseline circumstances of each island and the corresponding level of ambition for RE penetration.

These studies helped identify technical requirements and responsibilities for the day-to-day operation of RE deployment, evidencing the need for the project to include a given set of institutional arrangements. This led to the definition of administration manuals which built the organizational apparatus for the project to be adaptive and sustainable over time.

Takeaway: Create evidence all sub-markets can relate to and think about implementation arrangements

By acknowledging key differences among sub-markets for RE deployment, a pre-selected range of feasibility studies produced technical designs and outcome-estimates that spoke directly to the full set of potential actors that could scale-up investment.

Feasibility studies can shed light on organizational and managerial needs of a technical solution in order to sustain itself and eventually scale up. Drawing from experience in Maldives, the capacity to design arrangements that optimize the alignment between technical needs, installed capacities, decision-making bodies, and accounting mechanisms, is likely to be supportive of TrC.

An applied example from the Colombia case study (CTF)

Colombia's *Financing Program for the Technological Transformation of Bogota's Integrated Public Transportation System* aimed at promoting the adoption of clean technology buses in Bogota, but bus operators were uncertain about the implications of the solution.

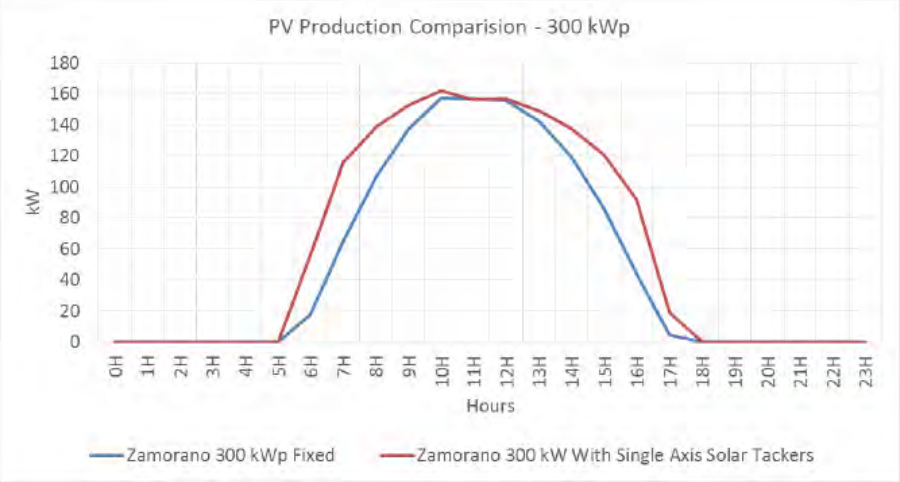
IDB Group supported a testing program that comparatively assessed the environmental performance of hybrid, electric and conventional buses in four Latin American cities (including Bogota). The study verified the effectiveness of the solution by proving the lower emissions of hybrid and electric buses on-site, allowing stakeholders to share experiences, compare performance and propose adjustments to meet local needs. By involving bus manufacturers and operators in these experiments, the tests served as a way for final users to directly experience with the technologies and be more open to new ideas.

Takeaway: Use participatory approaches to help shift mindsets and maximize learning

Feasibility studies can be carried out with a regional focus when the challenges faced toward the adoption of certain practices or technologies are shared across the region in similar contexts. By including more than a single project, feasibility studies can strengthen networks that increase knowledge-sharing and contribute to potential for scaling up.

A participatory approach to feasibility studies can help shift mindsets that may otherwise be resistant to change, using both data and experiences as a way to modify the way stakeholders perceive and react to change.

Feasibility Study in action: An extract of the feasibility study in the case study from Honduras (SREP)



PV	Array annual production kWh/yr	Surplus Energy kWh/yr	Consumption from PV kWh/yr	Savings* $/yr	Capital cost $	Simple payback
299 kWp with fixed racking	435,285	25,388	409,897	$45,908	$358,800	7.82
300 kWp with single axis (N/-S) tacking motors	531,161	10,124	521,037	$58,356	$400,026	6.85

The feasibility studies included in the *Honduras Self-Supply Renewable Energy (RE) Program* are a good example of this method in action. Among other elements, one of the feasibility studies financed as part of the Program compares the energy generation potential and capital costs of two alternatives in solar PV. It includes detailed descriptions of each alternative, considering the physical and regulatory context in which they would be implemented, as well as the financial requirements and outputs expected from each. (CBCL, 2018b).

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What Are They and How DoThey Work in Practice?

Gender inclusion frameworks are applied to conceptualize and design interventions that reflect an understanding of women's lives, and how they differ from those of men. Their use seeks to instill gender equality into investments by identifying and addressing the needs of women and men in their design, implementation, monitoring and evaluation processes.

These frameworks are utilized by Multilateral Development Banks (MDBs) mainly to: a) identify gender disparities, both in the problems being tackled, as well as in the investments proposed to solve them (gender analysis); and b) guide the development of road maps to tackle these disparities (gender action plans). The IDB Group has established gender equality as an objective to pursue across the entire project portfolio: not only in those projects seeking to tackle it directly, but wherever the investment's characteristics allow it. Similarly, the Asian Development Bank (ADB) uses a four-tier gender categorization system to define, clarify and make the concept of gender mainstreaming more tangible in all its projects and programs. Based on the opportunities that each investment presents to tackle gender disparity, the category assigned defines the steps to follow to advance gender mainstreaming, including whether a gender action plan is necessary or not.

The Climate Investment Funds (CIF) also have a Gender Policy in place that, recognizing the primacy of MDB's gender and safeguard policies, serves as a guiding document before the investment's gender action plans are developed. This policy is regarded as crucial because transformational change, in order to be truly sustainable, must ensure that the benefits derived from it contribute to broader, shared development goals that cannot be achieved without gender equality.

How Do They Operate at the Different Levels of MLP?

At the **landscape level**, gender inclusion frameworks should be used to hone climate investments, by characterizing *idiosyncrasy trends* in men and women's roles and the factors behind them, reflecting on how low-carbon development and climate resilience can address and harness them. For example, a sustainable forestry project may improve its likelihood of exerting deeper change if it understands *how the role of women* in household-level productive rural practices *has changed*. Another strategy at this level would be to tie climate gender-responsive actions to the *international structures* and commitments that are driving the gender agenda and its global institutional arrangements (e.g. U.N. Women, Sustainable Development Goals), to increase the relevance and long-term sustainability of a climate investment.

At **regime level,** gender inclusion frameworks should be used to identify *systemic barriers* limiting transformational change (such as *regulations or cultural* practices) and define ways in which these can be tackled through gender-responsive climate strategies. For example, by identifying cultural barriers to the adoption of solar cookstoves, and the key role that women can play in shifting mindsets in the community, given their role in household-level decision-making.

At **niche level**, climate solutions must build on the *transformative agency* that women have in any given context to advance a low-carbon, resilient agenda, reinforcing *learning processes* that can be conducive to leverage their insight, while leveling the ground in terms of *training* in order to implement project activities. For example, by targeting women as recipients of an agricultural resilience credit, and providing them with complementary training, household economies and inter-generational financial education may be strengthened.

Main Components

- **Gender Analysis:** Different needs and priorities of women and men in a given issue or intervention, identified by assessing differences in gender roles and opportunities available.
- **Gender-Based Risks:** Potential negative impacts to gender equality that could be directly or indirectly attributable by an investment.
- **Gender Categorization:** Degree of relevance that gender issues have for a particular investment, which will define whether a gender action plan is necessary.
- **Gender Action Plan:** Measures to tackle gender disparities in the project's context.
- **Gender-Disaggregated Indicators, Baselines and Targets:** Quantitative information that will allow implementers to assess progress on gender-related issues and on gender action plan activities. Definition of targets is considered critical for gender elements to be taken seriously.

Note: components are largely derived from MDB gender toolkits. ADB has multiple sector-oriented toolkits, out of which, due to their relevance for CIF projects, only the Energy and the Public Sector Management Toolkits were considered. Sources: IDB 2017; ADB 2012a; ADB 2012b, and ADB 2013.

TrC-Related Questions That They Can Help Answer

1. Relevance. How can co-benefits for promoting gender inclusion be maximized through this climate investment? Will this contribute to boost its potential for TrC?

2. Relevance. How can this climate solution perform better than other potentially transformational investments, in terms of its distributional impacts on women and men?

3. Systemic Change. Are there any market, cultural, financial or other types of systemic barriers that prevent women from adopting and benefiting from this climate investment? How could project design better understand and address them in a transformational way?

4. Systemic Change. How can this climate investment support women leadership and in doing so, increase its likelihood of achieving its intended impact on mindsets, behaviors and institutions?

5. Scale. Are gender roles and disparities likely to have an impact on the climate investment's potential to be expanded and diffused? How can project design maximize supply and access among both women and men?

6. Sustainability. Could this climate investment have unintended negative consequences in gender equality or women and men relations in the short, medium or long term? How can they be minimized?

7. Sustainability. Are there any gender-related disparities or risks that could compromise project implementation or sustainability through time?

Synergic Relations with Other TMAs

Theory of change: For an investment to achieve "gender transformative institutional change" as advocated by the CIF, the elements of its theory of change should be able to transcend the mere inclusion of gender aspects as additional expected outcomes or reportable indicators. Rather, the investment's rationale could determine from the start how a gender focus can elevate the likelihood of delivering transformational change and in turn, how the climate investment will contribute to transform gender relations and practices. To do so, a possible strategy would be to carry information collected through the Gender Analysis and others, using it to rethink the types of inputs and activities that shape the investment. Ideally, the full cause-and-effect chain should be geared towards seizing climate action to reduce gender disparities, and in turn this gender improvement can be leveraged in favor of transformative climate impacts.

Stakeholder engagement: Stakeholder engagement is the most important mechanism to ensure climate action is responsive and understanding of women's lives and relationship to the elements touched upon by the proposed investment. It generates valuable inputs for gender inclusion frameworks by revealing gender roles, disparities, opportunities to advance environmental agendas, and expanding the network of allies supporting implementation.

Programmatic approach: Overarching development strategies, such as investment plans (or even national development plans) can largely benefit from gender inclusion frameworks to identify synergies and co-benefits across the range of projects and programs that will be implemented.

Through which MLP-Tactics can they strengthen TrC?

Issue linkage. Gender inclusion frameworks are useful to get a grasp of deep gender and social disparities that constitute a priority to beneficiaries and other relevant investment-related stakeholders. When applicable, low-carbon or resilient investments can adopt these concerns as critical issues to be addressed through climate action, in order for solutions to become more relevant to the context, garner support and gain momentum towards transformation.

Challenge established technologies and practices. When identified, preexisting gender inclusion efforts that are exerting pressure on institutions to be more gender responsive, can constitute potential partners to evidence how prevailing practices are suboptimal on other fronts, including low carbon and resilient development. The ability to make these agendas compatible, and to craft gender-responsive climate investments that double down on these pressures, can result in a wholesome rethinking of regulations, standards and institutions, managing change towards a new order that is both more gender inclusive and climate aware.

Incorporate influential agents of change. Fostering decision-making roles and leadership of women as agents of change, either as individuals or through social organizations and networks, can offer powerful social structures and social capital to increase the likelihood of transformational climate investments.

An applied example from the Tajikistan case study (PPCR)

According to the CIF Gender Action Plan – Phase 2 (Revised), ADB's PPCR *Tajikistan Pyanj River Basin Project* is good practice of gender mainstreaming due to its multi-stakeholder planning (which considers women's associations); linkages to the national women's machinery; gender-sensitive social mobilization and institutional development in land and water management; and clear gender targets in employment, training, and governance. As a result, the project has reached 35,000 households and has improved water storage infrastructure in this climate-vulnerable basin, which has resulted in a reduction of 75 percent of women's water collection time.

Takeaway: Use gender inclusion frameworks to tap into local leaderships

A gender-responsive design of climate interventions may offer unforeseen resources to the benefit of the successful implementation of a climate solution.

The improvement of women's livelihoods through climate action could open up opportunities to better engage them as leaders of further low carbon development and climate resilient activities, something that may contribute to the scalability of the investment.

An applied example from the Lao PDR case study (FIP)

Lao PDR's Protecting Forests for Sustainable Ecosystem Services Project has been signaled as an example of how gender can be integrated in forest management projects. Women were included throughout the project's life cycle, starting with active participation in stakeholder consultations. Collaboration with Lao Women's Union increased outreach to women in the project area. Finally, gender equality is embedded in the project's targets, that include a) a minimum of 40% female beneficiaries having increased monetary and non-monetary benefits from forests; b) increased participation of women in local meetings on forest demarcation and preparation of community forest development plans, and c) support on crop diversification, livestock management and non-timber forest product development for women, among others.

Takeaway: Incorporate a gender framework throughout the project's life cycle

Gender mainstreaming can contribute to improved results at all stages of a project's life cycle: from more accurate problem identification to enhanced support during implementation and evaluation. Setting gender targets as part of the main project indicators can ensure that activities focused on reaching these outcomes will be taken seriously, which strengthens the sustainability of the investment and locks in the support that environmental outcomes expect to draw from advancing a gender agenda.

Gender Inclusion Frameworks in Action: an extract from the case study in Maldives (SREP)[1]

Gender Action Plan[i]

Activities	Indicators and Targets	Responsibility	Time Frame
Output 1: Enhanced capacity of PMU and Fenaka to implement RE mini grid			
(i) Gender inclusive public consultations conducted during project design and implementation	• Include the Island Women's Development Committees (IWDC)[ii] [approximately 162] and its members in the public consultation processes • Ensure women's participation either through women-only consultations and/or mixed groups [Target: at least 33% women participation], with IWDC support to mobilize women.	PMU and utilities	Year 1 onwards
(ii) Employment generated, with a focus on local labor and women's employment during project construction	a. IWDC members consulted and included in all awareness raising activities. b. Contractors' agreements to include: equal pay for work of equal value, gender-inclusive core labor standards, special facilities for women workers and gender-inclusive awareness raising for risk mitigation.	PMU and utilities	Year 1 onwards
(iii) Technical and skills training and/or retraining for women for employment in island-level 'last mile' duties and customer services[iii]	a. Women trained/retrained and employed in technical maintenance and power plant duty[iv] [Target: in at least 2 of the 5 pilot islands in phase 1, woman are trained and employed as technicians][v]. b. Women trained/retrained and employed as customer service officers for mini grid systems [Target: at least 25% women in phases 1,2, 3 and 4].		
(iv) *Corporate Social Responsibility/ community outreach program* for household demand-side-management, to raise awareness on energy efficiency among women household consumers in the 162 project islands.	a. *Fenaka's* Corporate Social Responsibility/community outreach program rolled out with a focus on[vi]: • Household demand side management to promote energy efficiency ▪ use of energy saving/LED[vii] light bulbs ▪ changing consumer behavior patterns in energy consumption/saving; and • Benefits of renewable energy[viii] and opportunities for productive energy use. • IWDC trainers will conduct user-education sessions in the 162 project islands b. LED bulbs distributed to cover the households in the five pilot islands and targets set for islands in preceding phases. c. At least 4 (and up to 12) Training of Trainers (ToT) sessions[ix], with participation to include: *Fenaka* staff head office (2-3)/regional (2-3)/power station (2-3) and IWDC members(1-2 per project island) [Target: at least 50% women's participation]. d. IWDC island-based training will be conducted house-to-house or as one training session, depending on number of households.	*Fenaka* PMU, Social/gender specialist DSM specialist	
(v) CSR/community outreach program targeting students in Grades 11, 12 implemented, with a focus on female students	a. Promote awareness on: renewable energy benefits; energy efficiency/saving behavior patterns b. Promote female students to take up technical/engineering vocations/studies c. Promote female students to take up internship programs with Fenaka in island project sites. d. [Target: Schools providing Higher Secondary School (Grade 11, 12) education in project islands][x]		

Through ADB's gender inclusion framework, the program was categorized as "effective gender mainstreaming" (the second of the four categories used by ADB), which requires the development of a gender action plan outlining specific activities to advance gender equality, as well as indicators, responsibility and time frames for each of the activities included. The plan illustrates how gender roles can be utilized to advance a low carbon agenda: beyond ensuring women's participation in consultations and as recipients of technical training, the plan required two Corporate Social Responsibility programs from the utility company: The first one focused on household demand-side-management, to raise awareness on energy efficiency among women household consumers as a way to accelerate behavioral shifts. The second one targeted students in grades 11 and 12 (with a focus on female students), and aimed at shifting consumer behaviors, but also promoted female students to take up technical and engineering studies, as well as internships with the utility company in island project sites, thus aiming for more long-term impacts, advancing gender and RE targets hand-in-hand.

[1] *This example was taken from the literature review, but it was not possible to verify the extent to which the gender action plan has been implemented, nor the degree of transformational impact achieved through it. Source: ADB, 2012c.*

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PRINCIPLES OF BLENDED FINANCE

What Are They and How Do They Work in Practice?

The principles of blended finance are a set of guidelines that offer orientation to practitioners involved in investments that combine concessional and commercial financing. Their application is meant to inform both the design and the eligibility of investments, in such a way that concessional funds being used in blended finance can be channeled into projects with high impacts on development, and with an ability to eventually achieve long-term commercial sustainability.

The principles were drafted and agreed upon by the *Development Finance Institutions Working Group on Blended Concessional Finance for Private Sector Projects* ("DFI Working Group")[1] . They serve as a common framework that ensures "a harmonized, efficient and catalytic use of concessional resources, while avoiding market distortions and crowding out the private sector" (IDB Invest, n.d.).

In practice, the principles have been adopted by all members of the DFI Working Group. They are applied by private sector operation arms of MDBs, through internal procedures such as special policies, manuals, dedicated operational staff and independent reviews. The common language and convening space provided by the DFI Working Group allow MDBs to share and contrast the way principles are being applied in real-world cases of innovative financial solutions. Beyond this learn-by-doing approach, additional standards and quantitative parameters are being developed to ensure the principles are applied in a consistent manner across DFIs.

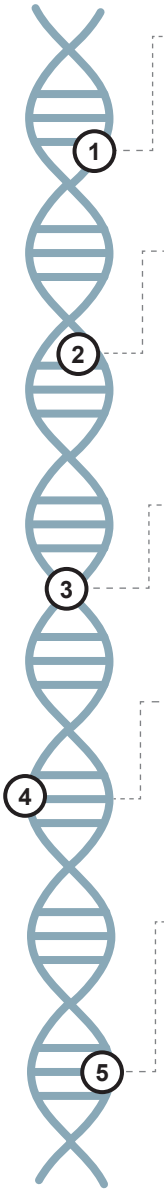
How Do They Operate at the Different Levels of MLP?

At the landscape level, the application of these principles should lead designers to reflect on exogenous risks and dynamics that could determine a project's commercial sustainability and ability to reinforce markets. For example, when a product's rate of return is highly dependent on exchange rates remaining stable, and an observed trend of volatility in currency markets exists, a project designer may be led to either negotiate financial arrangements in local currency or choose an alternative investment.

At the regime level, the application of these principles should help ensure that market conditions that could be decisive for an investment's long-term commercial viability are accounted for during the stage of design (e.g. effective demand, regulatory and tax-incentive conditions, etc.). By requiring that investments directly address market failures, externalities, information asymmetries and affordability constraints, the principles require a comprehensive understanding of market conditions, and push for investments better prepared to tackle the key barriers limiting TrC.

At the niche level, the application of these principles must provide a critical lens to evaluate the suitability of the institutional arrangements, clients, decision making bodies and project teams. For example, by ensuring that implementers adhere to best practice industry standards as well as other relevant policies and procedures. They also require an understanding of other possible niche solutions that could compete with the proposed one. This minimizes the risk of concessional resources being channeled into an alternative that is not the most competitive and/or that could prevent new entrants.

Main Components



Rationale for Using Blended Concessional Finance: Explains how a contribution is made beyond what is available, or otherwise absent from the market; provides assurance of no crowding-out of the private sector.

Crowding-in and Minimum Concessionality: Lays out how the support for the private sector will contribute to catalyze market development and the mobilization of private sector resources, while minimizing the use of concessional resources.

Commercial Sustainability: Evaluates the impact achieved by each operation in terms of contributing to the commercial viability of clients. It implies a revision of the level of concessionality over time.

Reinforcing Markets: Describes how finance is structured to effectively and efficiently address market failures, and minimize the risk of disrupting or unduly distorting markets or crowding out private finance, including new entrants.

Promoting High Standards: Demonstrates adherence to high standards of conduct in clients, including in the areas of corporate governance, environmental impact, social inclusion, transparency, integrity, and disclosure.

Source:
DFI WG 2018a; DFI WG 2018b.

[1] Constituted by the International Finance Corporation (IFC), the African Development Bank (AfDB), the Asian Development Bank (ADB), the Asian Infrastructure Investment Bank (AIIB), the European Bank for Reconstruction and Development (EBRD), the European Development Finance Institutions (EDFI), the European Investment Bank (EIB) the IDB Group and the Islamic Corporation for the Development of the Private Sector (ICD).

TrC-Related Questions That They Can Help Answer

1. Relevance. In comparison to other privately-led climate solutions with similar objectives, does this one provide a bigger "bang" for the concessional "buck"?

2. Relevance. How can this investment align with broader objectives shared at a global level, and would this increase its potential to crowd-in additional resources and support?

3. Systemic Change. Which externalities, market and institutional failures or affordability issues does the blended finance approach seek to address? Are there incentive structures that could be better aligned in order to tip this market towards TrC?

4. Systemic change. What are the key barriers to commercial sustainability? How are they expected to evolve after blended finance is applied?

5. Scale. Does the blended finance create a demonstration effect that provides proof-of-concept for commercial replicability? What would private markets need in order to provide resources for commercial replicability?

6. Sustainability. How can this climate investment minimize future, ongoing concessionality? How must market failures evolve in order to do so? Which exogenous factors does this depend on?

7. Sustainability. How does the climate investment avoid rent-seeking behavior among private beneficiaries?

Synergic Relations with Other TMAs

Programmatic approach: The bundling of various blended finance projects addressing a single market gap within a larger program provides a favorable arena for the application of the blended finance principles. Under this format, similar interventions may be staggered through time (e.g. various private geothermal projects with different start dates), and thus it will be possible to set clearer expectations about how grants and other supports are expected to decrease as market barriers are reduced or overcome (minimum concessionality). Also, a programmatic approach may reinforce the effect of crowding-in additional resources from the private sector. It can do so by tackling regulatory and policy uncertainties through public-focused projects.

Market analyses: By assessing all economic forces at play in a particular investment, they can reveal whether financially de-risking the investment will indeed be conducive to commercial viability and larger mobilizations of private capital, or if additional barriers in place could render this insufficient.

Economic Analyses: It provides information to identify solutions that can offer larger returns on smaller amounts of concessional finance or help justify how high-impact climate solutions with sustainable development co-benefits may justify larger concessional funding in the beginning.

Through which MLP -Tactics can they strengthen TrC?

Crowd-in and leverage resources. The principles stress the need to use concessional finance as a way to crowd-in commercial finance, by improving the financial profile of investments.

Identify and empower promising niches. The principles incentivize a critical assessment of niche-innovations and market characteristics to ensure supported projects are relevant and viable. They direct concessional funds towards accelerating innovations capable of addressing market failures, supporting first movers through de-risking and crowding in additional investments. They also help ensure that support for a particular niche does not distort the market and create additional barriers for further innovations.

Promote inner adoption. As an operating principle, projects structured around the principles of blended finance must adhere to particularly high corporate governance, environmental and social standards. MDBs and other DFIs can use this to promote changes in values, practices, and behaviors within the enterprises and organizations that climate investments touch upon.

An applied example from the Indonesia case study (CTF)

Indonesia's *Private Sector Geothermal Energy Program* faced difficult financial barriers derived from the high risks and upfront investment costs of geothermal energy exploration. A comprehensive strategy included in the CTF investment plan coordinated multiple investments targeted at different barriers that were limiting geothermal development. With the support from this plan, ADB maximized the ability of the CTF's concessional resources to bring in private sources of finance. As an example, the Muara Laboh Geothermal Power Project was financed through a limited-recourse, long-term project financing structure that was made possible by blending CTF concessional resources with ADB's own account financing and private capital. 25% of the total cost of the project was covered by equity, and an additional 22% by commercial loans (World Bank, 2017). The project is expected to demonstrate the viability of large-scale geothermal power projects, encouraging new geothermal baseload power generation that will help displace fossil-fuel-generated power.

Takeaway: use blended finance to overcome upfront investment costs of demonstrative projects

The principles of blended finance can guide institutions towards investments that, despite entailing particularly high upfront costs, can have profound impacts in new markets. This happens when blended finance is applied in projects with a strong demonstration effect in an environment that is showing improved enabling conditions and signs of future commercial viability. By counteracting short-term perceptions of risk, a gradual crowding-in of resources can help overcome financial barriers that are beyond the capabilities of any individual actor.

An applied example from the Mexico case study (CTF)

Mexico's CTF project *Capital Markets Solution for Energy Efficiency Financing* was based on a business model (that of Energy Service Companies, or ESCOs) that could not be easily financed through traditional credit products available in the Mexican market. To overcome this barrier, the project created a special purpose vehicle to aggregate multiple small-scale energy efficiency projects. On this basis, it will issue a "green bond" in capital markets, supported by a CIF-IDB Group guarantee. Concessional resources are thus being used to reduce perceptions of risk around a new model of finance for the sector; in turn, the design of this project, based on the possibilities of institutional investors to participate in capital markets, is expected to be the key leverage that crowds-in resources from the private sector.

Takeaway: use concessional finance to create financing alternatives that crowd-in commercial investment

With initial support from concessional resources, investments can develop innovative models to transform the underlying logics and criteria through which private actors participate in climate change and resilience projects. The application of the principles of blended finance can help ensure these new models indeed correct market failures, rather than create distortions.

An applied example from the Colombia case study (CTF)

Colombia's *Financing Program for the Technological Transformation of Bogota's Integrated Public Transportation System* supported the creation of a loan that combined concessional and commercial resources to overcome financial barriers limiting clean bus procurement. Traditionally, commercial banks would not offer loans to bus operators, mainly due to lack of financial history and unfavorable risk profiles. Concessional resources were thus channeled to finance up to 50% of the total cost of each unit, requiring the other 50% to be supported by a combination of commercial bank loans and up-front resources from bus operators. The availability of concessional finance thus reduced the risk of lending for commercial banks, while effectively creating a financing arrangement that allowed bus operators to procure clean technology buses.

Takeaway: use concessionality to incentivize creation of commercial loans

Actors with an important role in low carbon and resilient development, do not always have an attractive or typical financial profile. This can render them ineligible for commercial lending.

A conscientious application of the principles of blended finance can shed light on the convenience of using concessional funds to address this. They can be used to generate arrangements that lead commercial banks and other investors to offer financial products tailored to the conditions of these actors.

Principles of Blended Finance in action: an extract of procurement guidelines in the Colombia case study (CTF)

Procurement of Clean Technology Buses:

Step 1. The Integrated Public Transportation System (SITP in Spanish) requests the bus operator to substitute all buses that have reached the end of their service life; they must either procure buses that are completely new, or purchase used buses that have not been completely depreciated.

Step 2. The operator applies for a credit from its Local Financial Institution (LFI) to procure all units requested by SITP, both new and used. The LFI evaluates the client's credit risk and decides whether to offer the credit.

Step 3. If the operator decides to acquire clean technology buses under Bancoldex's concessionary line of credit (applicable to hybrid or electric buses of up to 80 passengers), the LFI can request up to 50% of the total costs of each unit to be financed by Bancoldex. The total amount must not exceed the maximum amount of co-financing established in the program's Credit Rules. When clean technology buses are purchased, the transaction may also involve co-financing from technology providers.

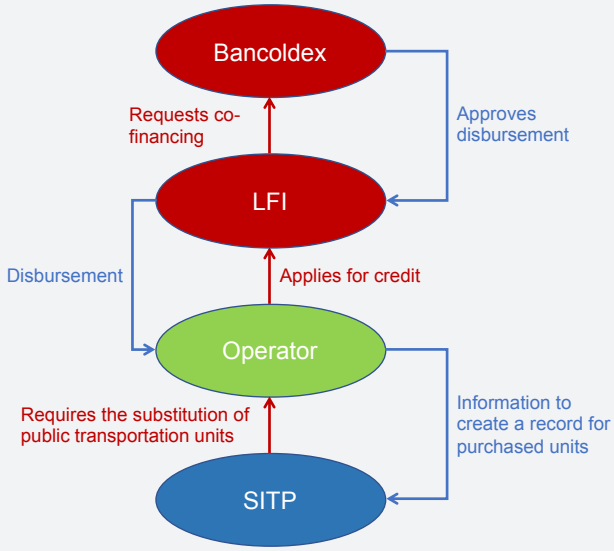
Step 4. Bancoldex assesses eligibility of the LFI, of the operator, and of the buses that will be financed. This includes reviewing certifications from technology providers in the correct disposal of battery units once they have reached their life cycle.

Step 5. Should the assessment turn out to be positive, Bancoldex will proceed to disburse its contribution to the LFI so that, in turn, the LFI may provide the operator with the credit necessary to complete the purchase. In the case of electric buses, technology providers can participate in a co-financing arrangement.

Step 6. The operator creates a the record for the new unit within SITP, which will allow it to begin operations.

Step 7. The operator issues regular capital and interest payments to the LFI. In turn, the LFI issues payments to Bancoldex for the amount that was co-financed.

Phase 1. Procurement of Clean Technology Buses



The extract illustrates the step-by-step *process for clean* technology bus procurement through Colombia's *Financing Program for the Technological Transformation of Bogota's Integrated Public Transportation System*, which is explicit in the balance between concessional and commercial resources to be used for each loan. It can serve as example of the principle of *crowding-in and minimum concessionality*, while the *rationale for using blended concessional finance* is articulated in the project document.

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What Is It and How Does It Work in Practice?

The Development Effectiveness Learning Tracking and Assessment (DELTA) tool is a flexible, fact-based scoring system used by IDB Invest[1] to measure impact, economic returns and value added of each project (IDB Group, 2018). It allows to assess all IDB private sector investments in terms of their: a) development impact and additionality; b) alignment with the strategic priorities of the country and of the IDB Group; and c) quality of the design of the project at entry. The DELTA tool was created with the aim of increasing quality in project selection and design beyond the financial rationale for an investment, ensuring that it both responds to priorities and holds potential to have a meaningful and measurable impact on development.

The DELTA tool is only one of various components of the Development Effectiveness Framework (DEF, also known as Impact Management Framework). The DEF is a general approach used by IDB Invest to optimize and prudently manage available resources in line with mandates and priorities, and is also meant to promote and support monitoring, measuring, and reporting of how development results are achieved. As such, DEF brings together a wide set of tools, mainly: a Strategic Selectivity Tool and the Portfolio 2.0 Approach –constituted by the DELTA tool and the Financial Contribution Rating (FCR)–, used at origination or entry; the DELTA in supervision and Annual Supervision Reports (ASR), both used during execution; and the Expanded Supervision Reports (XSR) and Impact Evaluations, which are used after completion or at maturity. The DEF is also aided by Development Effectiveness Analytics system (DEA), which are used cross-cuttingly throughout origination, execution and supervision. Although this Guiding Sheet will only analyze DELTA due to its role in the design and preparation of projects (the focus of this toolkit), it is important to underscore that its use is always embedded in this larger approach to development effectiveness within IDB Invest.

As mentioned, DELTA is part of the Portfolio 2.0 Approach which seeks to orient the selection of projects that have an impact and are aligned with IDB's Invest risk appetite and financial sustainability mandate. Furthermore, it is regarded as a tool that is strengthening institutional management since it allows to swiftly calculate expected results during origination; and at a later stage supervise concrete results achievement throughout implementation, in a timely and transparent way.

How Does It Operate at the Different Levels of MLP?

At the landscape level, the application and subsequent monitoring of the DELTA tool, provides lessons that can be used by projects in the same country or sector as the climate investment under design. This can offer information about trends and exogenous factors that had an impact on past investments.

At the regime level, the DELTA tool keeps track of whether IDB Group has worked with the recipient country (e.g. via technical assistance) in order to ensure appropriate enabling conditions for an investment (non-financial additionality). As such, it provides information to examine if the project is bankable under prevailing regulatory conditions, meaning if the public private partnership (PPP) framework and associated contracts being used are adequate. This information can be useful to several projects working within the same market.

At the niche level, information collected through DELTA regarding the investment portfolio in Latin America and the Caribbean, could help identify emerging innovations in related sectors that may be complementary or supplementary to a given climate investment.

[1] *IDB Invest is the private sector arm of the IDB Group.*

[2] *For details on how each of these tools is used within DEF, please refer to the publication: IDB Group (2018). Development Effectiveness Overview. Washington D.C., USA: Inter-American Development Bank, 163 pp*

Main Components

Assessment of the alignment to country and corporate priorities. Binary assessment (yes/no) of whether the investment aligns and contributes to: a) IDB Strategic Development Objectives; b) IDB Invest Strategic Development Objectives; c) Country Priorities.

Project score: Quantitative evaluation of a) the development outcome (65% of total score) in terms of its contribution to social and economic development, business performance, and social and environmental sustainability; and b) the additionality (35% of total score) in financial and non-financial terms (comfort, environmental and social, gender equality, framework, and capabilities).

Evaluability score: Assessment of the overall design of the investment in terms of its logic, results matrix quality, monitoring and evaluation, and financial and economic analysis quality. It seeks to determine whether the design of a project will allow to evaluate and verify its development impacts.

As part of the of "Development Outcome" within the Project Score, the evaluation of how an investment "Contributes to Social & Economic Development" includes an assessment denominated "Quality of Reach". This component is very valuable from a TrC point of view, since it values the investment in terms of direct beneficiaries and benefits that are of priority to IDB Invest, such as: poor, vulnerable or excluded populations, women, SMEs, or tackling climate change, increasing productivity, and improving products to better address beneficiaries' needs. This subcomponent can also identify the extent to which an investment produces systemic effects beyond its end beneficiaries ensuring long-term, sustainable results at a higher level. For example: improving or expanding market linkages, fostering innovation, spreading knowledge and good practices, promoting scaling or replication, and improving country or sector frameworks. Also within "Development Outcome", the evaluation of the "Environmental and Social Sustainability" can provide designers with important information about how standards in these two sustainability spheres can be improved in order to align with best practice.

Note: The application of DELTA is carried out through the deployment of a development effectiveness officer in each investment team this officer meets periodically with a quality internal board to assure criteria are applied consistently across the portfolio.

Source: IDB 2018; Maffioli 2018, and Bautista, 2016.

TrC-Related Questions That It Can Help Answer

1. Relevance. How can the climate investment promote a clear targeting of the country's priorities and of the needs of direct and indirect beneficiaries?

2. Systemic change. Is it possible for the investment to have an impact beyond its direct end beneficiaries? Which?

3. Scale and systemic change. Will the investment promote market linkages and replication? What type of demonstration and learning can it seek to facilitate?

4. Scale. Does the Evaluability Score indicate that this investment is likely to produce verifiable results that can later be used with a demonstrative purpose?

5. Sustainability. Does the DELTA in supervision and completion indicate this investment will be able to sustain itself in this market, once concessional funding comes to an end?

6. Sustainability. Are there comparable investments in the past that have been evaluated through DELTA? Have they been able to achieve their intended development objectives sustainably? Why/ why not?

Synergic Relations with Other TMAs

- **Development Effectiveness Framework (or Impact Management Framework):** As mentioned, DELTA is part of a larger set of tools used by IDB Invest to determine an investment's relevance, its expected development impact, and the assurance of the evaluability of operations. Particularly relevant in the context of TrC, is the "Strategic Selectivity Tool" which helps identify country-specific needs and IDB Invest's comparative advantages in addressing them. As such, these tools could provide value-added for evaluating the dimension of relevance within the TrC framework.

- **Economic analyses:** As part of its Project Score on development outcomes, economic analyses are carried out in for every IDB Invest project (sometimes, this is substituted by an assessment of the economic relevance of the investment); to the degree these analyses are able to adequately account for the economic and social returns of low carbon and climate resilient measures, they may contribute to a stronger role for climate investments within the portfolio.

- **Theory of change:** A robust and clearly-laid out chain of causes and effects with explicit assumptions will contribute to increasing the evaluability scores of climate investments within DELTA.

- **Market analyses:** A sector-specific assessment of market conditions can complement the revision of performance trends in the DELTA database for the country or sector; and can provide inputs to strengthen the DELTA score of climate investments by showcasing market linkages, estimated impacts on productivity, etc.

Through which Tactics can it strengthen TrC?

Seize ongoing transformations. By assessing the performance of current and past projects evaluated through DELTA, project designers can be better equipped to identify promising gaps in which climate investments could insert themselves, in order to tip markets towards transformation.

Build evidence. Using the DELTA indicators – and other analytics facilitated through additional tools in the DEF–, it becomes possible to powerfully communicate country and sector past effectiveness and potential, providing a trustworthy and swift channel to portray the relevance of a climate investment. Also, through the application of evaluability criteria, project designers can ensure that the data produced by the project will be helpful to articulate and disseminate its achievements (including co-benefits that are salient to stakeholders).

Identify and empower promising niches. DELTA represents a rigorous filtering method that may be used to parse out the entrepreneurial ideas and actors with the most promising characteristics for advancing low carbon and climate resilient development.

Applied example from renewable energy in Argentina

The use of the DELTA tool motivated project teams to explore incentives to incorporate a gender equality program (internships on mechanical and electrical engineering for women in solar photovoltaic plants and windfarms), which resulted in the mobilization of blended finance resources at a preferred interest rate.

Lessons Learned to Support TrC

- The presence of dedicated personnel to promote certain criteria are met (in this case, the development effectiveness officer), provides an interesting example of mechanisms that can be used by MDBs in order to mainstream concepts such as TrC in project design. The application of the Development Effectiveness Framework (or Impact Management Framework) illustrates a model to promote cross-cutting and full-cycle learning for continuous improvement in design.
- Databases related to the application of the Development Effectiveness Framework (among them, those provided by the DELTA tool) present standardized information on project design and performance. In the medium to long term, when sufficient historical data is accumulated, they may provide a potent way to evaluate what types of investments may contribute the most to aspects of relevance and sustainability in each sector and market, with possible reflections on scale as well.
- Although the Development Effectiveness Framework and its DELTA tool already incorporate the concepts of relevance, sustainability, systemic change and scale, designers should validate their definitions and reflect upon how homologation or equivalences among IDB Invest and the TrC framework could be achieved.
- Other lessons from the Development Effectiveness Framework and the application of the DELTA tool so far include:
- Local context is key. In projects that did not consider local market conditions, investments failed to materialize as expected. Loans not denominated in local currency ran the risk of creating asset-liability mismatches for clients.
- Well targeted advisory services are needed. For example, in some cases small and medium-sized enterprises have been poorly understood, and they have been subject to the misapplication of creditworthiness assessment tools.
- DELTA can be used as a platform to incentivize stronger links with private enterprises' value chains, through the incorporation of information and communication technologies and training to increase efficiency in production and services beyond the direct client. This may hold promise to mainstream TrC considerations along market linkages.

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03

Module 3: Case Studies

Introduction to Module 3

This module presents practitioners with a series of eight case studies on projects and programs funded by the Climate Investment Funds (CIF) across its four programs: the Clean Technology Fund (CTF), Scaling Up Renewable Energy Program in Low Income Countries (SREP), the Pilot Program por Climate Resilience (PPCR) and the Forest Investment Program (FIP). Four of these studies were carried out in coordination with the Asian Development Bank (ADB) and four were coordinated with the IDB Group. The documentation and analysis of these case studies involved site visits in the cases of Maldives, Indonesia, Bolivia and Mexico, and over 60 interviews with MDB staff, representatives from the private sector, country governments and beneficiaries.

These projects and programs do not represent cases with verified transformational outcomes; rather, they have been retrospectively studied for the purposes of this toolkit, to understand what aspects of their design can provide lessons learned in terms of strengthening their transformational change potential in any of the four dimensions of TrC.

For further information, please refer to Module 1 in this toolkit. For further details in the selection criteria and other methodological aspects, please refer to the Full Report, available upon request.

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HOW TO READ CASE STUDIES
[MDB] | [COUNTRY] | [CIF FUND]

How to Read Case Studies
Note to the reader: The purpose of this two-page document is to illustrate and explain the structure and logic that supports the case studies. Sections in brackets are filled with information pertinent to each case study.

Project / Program Description

[General overview of the project or program. The section lays out key objectives, activities and expected outcomes. Identifies stakeholders that have played important roles during design and implementation.]

Role of the Climate Investment Funds (CIF)

[Description of CIF's financial contribution to the project and how it relates to past or future projects that may be linked to a specific CIF investment.]

Current Status

[Brief description of the status of project, such as progress on its targets and next steps, if relevant.]

Photo of the project or program

Key Indicators

[Identification of the indicators the project or program has sought to have an impact on; when available, stakeholders have been asked to provide results achieved so far.]

Indicator	Baseline [year]	Target [year]	Results [year]
[Indicator 1]			
[Indicator 2]			

Financing

Presentation of additional sources of finance that have complemented investment by the CIF. The section helps compare the scale of investment across projects.

CIF fund	US$
Other financial contributions	US$
Other financial contributions	US$

Design Features with Transformational Change (TrC) Potential

[Key aspects of the project that were identified by project leaders and authors of the evaluation as connected to the potential delivery of TrC with an emphasis on any of the four transformational change dimensions: sustainability, systemic change, scale or relevance.]

Important methodological note: the link between these features and actual transformational change is not validated. These lessons are based on the interpretation by authors of the toolkit and project designers as aspects that contribute to TrC potential.

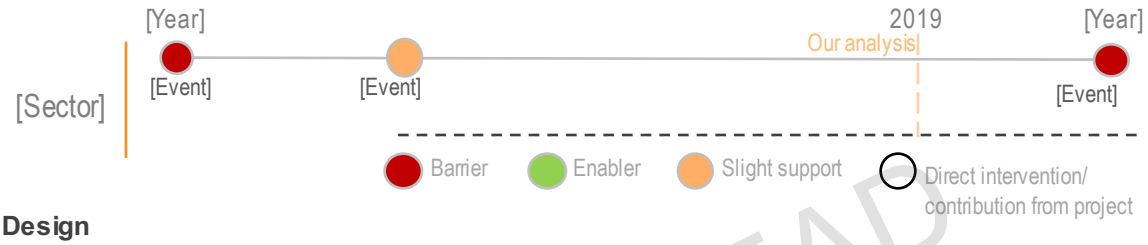
HOW TO READ CASE STUDIES
[MDB] | [COUNTRY] | [CIF FUND]

Timeline of Coevolutionary Processes[1]

[This section acknowledges that projects and programs do not operate in isolation. Rather, they are embedded in larger potentially transformational processes occurring in a given sector or structure (regime), and can be subject to exogenous forces beyond their control (landscape). For example: changes in legislation, economic downturns, scientific discoveries, etc. These dynamics influence the immediate surroundings (niche) of a project, requiring it to adapt and to impact these structures, to exert change.

In the following diagram, each row represents the timeline of a sector or structure that played a role in this project's evolution. Colored cycles represent distinctive events or transformations within that field, categorized either as barriers (red), enablers (green) or neutral/slight support (orange) according to the way in which they interacted with the project or program development. Circles with a black outlines represent what are considered to be direct contributions from the project or program.]

[1] This section draws from the analytical framework provided by Multilevel Perspective (MLP), explained in detail in the "MLP Explained" component of this toolkit. For further reference see: Geels, F. (2002). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. Research Policy 31.



Lessons of Design

This section presents the transformational features that can be linked to the design and preparation of the project, as identified by C230 through interviews and documentation review. It aims to draw lessons learned that may be useful for future application of TMAs. Each case study compiles between two and four Transformational Design Features.

Transformational Design Features	Relationship to TMAs	Design takeaways
1 [Challenges or opportunities. Descriptive section. Explains the situation this Transformational Design Feature intended to address or leverage. Transformative solution. Descriptive section that conveys the Transformational Feature identified in the project or program's design. **Bold letters** are used to point out the dimensions of TrC this features align most closely to.	[Descriptive & analytic section. Links the Transformational Design Feature with one or various **TMAs**. There are two ways to make this connection: a) direct, when stakeholders explicitly mentioned a direct relation; and b) indirect, when stakeholders did not mention the relation explicitly, but the linkage is clear based on the project documents analyzed by the research team. Indirect linkages are most common.]	[Analytic section. Conveys the key messages that project designers may draw from this experience, in order to design projects and programs better prepared to catalyze transformational change. Further on, these takeaways will be the main input for recommendations to be made in relation to each TMA.]

Key Tools, Methods and Approaches (TMAs)

Name of the TMAs associated to elements of transformational change in a project or program. In most cases, project documents are not explicitly labeled as a given TMA (e.g. do not include "political economy analysis" in their title); however, the research team linked them to a TMA by analyzing their components and the role they played during project design (e.g. the assessment explains the interaction of political and economic processes, political drivers, entry points assessment, etc.).

TMA	Found in
1. [Name of the TMA]	[Name of the document where it was found]
2. [Name of the TMA]	[Name of the document where it was found]

PRIVATE SECTOR GEOTHERMAL ENERGY PROGRAM

ADB| INDONESIA | CTF

Program Description

The *Private Sector Geothermal Energy Program* is part of a wider CIF effort to support non-sovereign and private sector geothermal projects facing first-mover risks and financial barriers in Indonesia.

Since beginning in 2010 (with a revised Investment Plan in 2013), ADB-led CIF support has focused on providing concessional funds to further develop a backlog of private sector geothermal projects in the country, which thus far has included: Sarulla, a brownfield development by Sarulla Operations Ltd.; as well as Muara Laboh and Rantau Dedap, two greenfield projects managed by Supreme Energy. Total expected capacity for these projects at design stage was approximately 490.9 MW.[1]

[1] Sarulla with 320 MW; Muara Laboh with 80 MW, and Rantau Dedap with 90.9 MW.

Role of the Climate Investment Funds (CIF)

A total of $150 million USD from the Clean Technology Fund (CTF) have been used to provide loans and share risks, particularly in upstream activities. Analysis indicates these resources have crowded-in additional funds from other institutions, including MDBs, the pubic and the private sector.

Current Status

The Program is supporting the implementation of four projects:

- Sarulla: Completed in 2018, with 320 MW
- Muara Laboh: Construction is expected to be completed by Sept 2019 with 80 MW
- Rantau Dedap Phase 1: Exploration only, completed in 2016
- Rantau Dedap Phase 2: Construction stage with 86 MW, expected to be completed by 2020

Sarulla Geothermal Plant in February 2019. Photo by C230 Consultores.

Key Indicators

Indicator	Program targets[a]	Achieved 2018[b]
Increased supply of RE geothermal power (MW)	750	320
GHG emissions avoided by the Program (million tons CO_2eq)	4.4	2.76
CTF financial leverage for the Program	17 to 1	18 to 1

[a] The Program is part of a larger, more ambitious CTF Investment Plan with a 2,200 MW new geothermal capacity target.

[b] Results reported refer exclusively to Sarulla. Rantau Dedap and Muara Laboh had not reached a reporting phase up to the moment when the study was carried out.

Source: TFC approved program proposal, and ADB project documents and reports.

Financing

	Program target (TFC approved)[c]	ADB approved project financing
CTF, Loans	US$ 150 million	US$ 150 million
ADB-PSOD, Loans	US$ 350 million	US$ 495.3 million
Others[d]	US$ 2,100 million	US$ 2,245 million

[c] The Investment Plan also included other projects and sources of finance directed towards geothermal energy, that were relevant at both Program and Project design levels: IFC's Geothermal Program and IBRD's Geothermal Clean Energy Project.

[d] "Others" includes equities, commercial banks, bilateral and public sector cofinancing sources.

Source: TFC approved program proposal, and ADB project documents and reports.

Design Features with Transformational Change (TrC) Potential

Relevance

Indonesia has an **unparalleled potential for geothermal energy** generation. The 2010 Investment Plan focused on supporting this energy source, but also allocated resources to other comparatively less promising RE and EE projects. In 2013, having gained a better grasp of the potential of privately-led geothermal projects given the new regulatory environment, the Investment Plan was modified, **concentrating efforts** to consolidate this source, and increasing by over 100% the geothermal energy targets for private-sector projects.

Systemic Change

Through its investment plan, the Government of Indonesia developed a comprehensive strategy that included programs and projects aimed to **tackle the main barriers** limiting private investment in geothermal. At the same time, it **combined financial resources** from multiple parties to reach the amounts necessary to catalyze a transformative shift towards geothermal sources.

Scale

The program supports a range of geothermal projects rather than a single one. **Short feedback loops for learning** were established among these projects, which allowed to carry on the lessons from one project to another, fine-tuning the specifics for project financing and **accelerating evidence-based adjustments** to the geothermal ecosystem in order to set the ground for future geothermal projects.

PRIVATE SECTOR GEOTHERMAL ENERGY PROGRAM

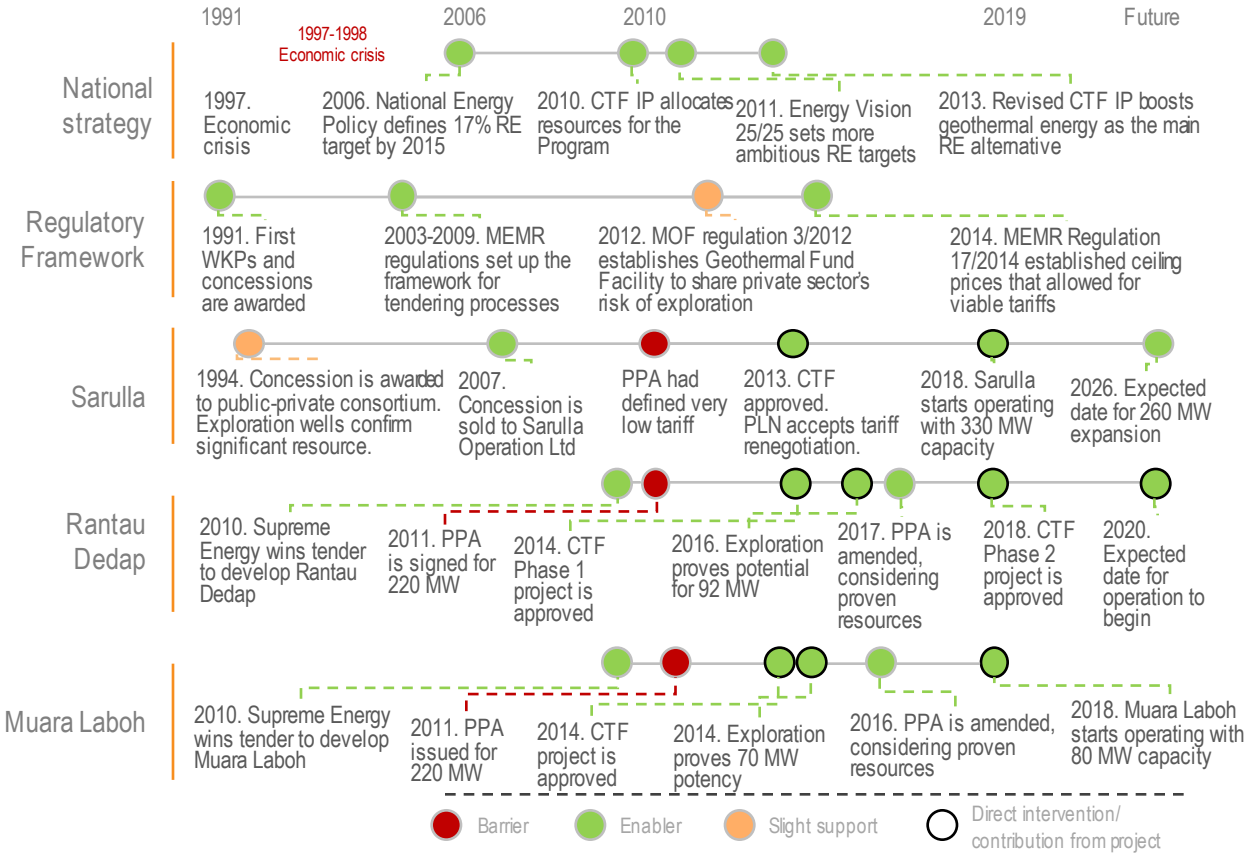
ADB| INDONESIA | CTF

Timeline of Coevolutionary Processes

Indonesia has a unique potential for geothermal energy generation, with an estimated resource slightly over 28,000 MW, which represents roughly 40% of the global geothermal energy reserves. National efforts to stimulate the sector can be traced back to the 1990's, with the definition of the first 18 geothermal working areas (WKPs) and concessions for exploration and exploitation. Unfortunately, financial crisis stalled development for over 15 years.

Between 2003 and 2009, a set of laws and regulations was passed to incentivize geothermal investment by Independent Power Producers (IPPs) and established a framework for tendering processes. This set an environment for investment, which the Government of Indonesia (GoI) supported with ambitious renewable energy (RE) targets: the National Energy Policy (2006) set a 17% RE target of for 2025, which the Energy Vision 25/25 (2011) expanded to 25%. By 2013, Indonesia had set the largest pipeline of geothermal development at 3,200 MW, representing 24% of the global pipeline at that time. Sarulla represents one of the pioneering investments in this regard, but due to its brownfield nature, it has been regulated under the previous, public sector-centered framework. Rantau Dedap and Muara Laboh represent geothermal investments regulated under the new, private sector-oriented regime.

The *Private Sector Geothermal Energy Program* has had to navigate challenges such as knowledge and institutional gaps related to procedures within the state utility company, Perusahaan Listrik Negara (PLN), to define attractive tariffs for geothermal energy purchasing. Also, shifting government priorities are recently signaling a preference for relatively more affordable –and carbon intensive, sources of energy. Finally, permanent obstacles are constituted by the inherent risks of exploration activities and the need for strong upstream investment.



"Sarulla is a big moment because after the crash there was no other development of geothermal… it has proven that geothermal can be developed; Muara Laboh and Rantau Dedap have followed the steps of Sarulla, but themselves are the pioneer for the new regime of geothermal"

– Mr. Nisriyanto, Supreme Energy

PRIVATE SECTOR GEOTHERMAL ENERGY PROGRAM

ADB| INDONESIA | CTF

Lessons of Design

	Transformational Design Features	Relationship to TMAs	Design takeaways
1	**Challenges or opportunities**. Indonesia's geothermal energy sector underwent over a decade of stagnation, lacking new investments and opportunities to implement the 2003 Law and 2007 Regulation regarding new geothermal projects. Uncertainty surrounded the regulations' ability to trigger a new wave of geothermal projects by independent power producers (IPPs). **Transformative design towards scale**. Since its conceptualization in the 2010 CTF Investment Plan, the program considered supporting a range of geothermal projects, instead of a single one, creating flexibility to implement during different time frames. This allowed stakeholders at the Government of Indonesia (GoI), MDBs, financial institutions and local technicians to carry forward lessons from one project to another, generating learning cycles throughout the course of the program. According to both the GoI and ADB, the opportunity to work on multiple, consecutive projects allowed them to gain clarity on the standards, needs and feasible benchmarks to **scale** and continue developing geothermal energy. The lessons derived from this experience, particularly from the first project (Sarulla), indirectly influenced regulations and terms of contracts, terms of finance, and informed the ways of assessing and responding to risk in this market.	The **programmatic approach** allowed the GoI to link multiple experiences, generating learning cycles with the potential to accelerate market preparation and reduce risks for future projects.	The creation of **short feedback loops** can allow projects to benefit significatively from their predecessors, as long as there are appropriate channels within government implementers and MDBs to ensure that feedback is obtained quickly and put to use.
2	**Challenges or opportunities.** Indonesia's geothermal landscape presented multiple challenges which called for different complementary solutions; these included finding financial alternatives to deal with large scale investments and risks, proving commercial feasibility, and ensuring the effectiveness of new enabling regulation. **Transformative design towards systemic change and scale.** The CTF Investment Plan (IP) assembled financial resources from development banks, the public and the private sectors. It also combined a diverse set of projects to address different challenges in this market, which were all consequential in building momentum towards what could become a **systemic change** for geothermal. A project in a brownfield stage, Sarulla was a "safe bet": it had pre-existing wells and large proven geothermal resources. Given its sheer magnitude (330 MW) and high probability to deliver, its main role was to signal geothermal development as a business opportunity for the domestic financial sector, transfer technology and know-how to Indonesia, and demonstrate the government's commitment to geothermal development. Nonetheless, since Sarulla was working under an "older regime" of state-led geothermal development (joint contract), it was not reflective of newer geothermal regulation, which was meant to support projects led exclusively by IPPs. Rantau Dedap and Muara Laboh came later, and since their resource was not yet proven, their risk profile was superior. They were meant to serve as flagship examples of the capacity of the new regulatory regime to place the full risk of geothermal development on the private sector, while providing enabling conditions in terms of access to finance and tariff-setting. If successful, they are expected to trigger **scaling** through demonstration, by proving that the environment is supportive enough for the private sector to lead investments in this market, which is considered more catalytic than public projects.	The **programmatic approach** made it possible to combine different types of projects to face a wide range of market barriers that needed to be addressed. Applying the **principles of blended finance**, the Program was able to crowd-in a significant amount of resources in order to tackle the financial barriers of geothermal investment, aiming at a financial leverage capacity of 17 to 1 (17 USD for every USD from the CTF).	The **capacity to tackle main barriers** was enabled by selecting complementary projects within a single program, MDBs. This created multiple experimentation arenas through which to address a wider scope of barriers and offer comprehensive solutions, within short time lapses, to create certainty in market niches. The Blended Finance approach allows MDBs, the Private Sector and Governments to define common goals and generate synergies to overcome challenging financial barriers.

PRIVATE SECTOR GEOTHERMAL ENERGY PROGRAM

ADB| INDONESIA | CTF

Lessons of Design

Transformational Design Features	Relationship to TMAs	Design takeaways
3 **Challenges or opportunities.** Indonesia's energy resources offered opportunities to develop **a range of alternatives towards low carbon development**, including geothermal, hydric and solar. Nonetheless, growing evidence pointed towards the exceptional comparative advantage of geothermal in successfully displacing coal-fired power, since this energy source serves as baseload power (as opposed to RE), emits 10% of GHG emitted by fossil fueled thermal plants, and Indonesia holds one of the largest potentials at a global scale (28.5 million MW[1]). Due to the level of investment required to unleash its transformative potential, the market would benefit from a more **forceful definition of priorities** in order to achieve Energy Vision 25/25 through geothermal. **Transformative design towards relevance and scale.** The initial Investment Plan (2010) aimed to generate 800 MW from geothermal projects, and 2.0 Mtoe/y energy savings from a combination of energy efficiency and renewable energy projects. In 2013, having engaged with stakeholders and identified a larger private sector interest in geothermal than what had been initially estimated, the Investment Plan was revised and priorities were redefined: geothermal objectives increased from 800 MW to 1,900 MW, while energy savings from energy efficiency were reduced from 2.0 Mtoe/y to 1.0 Mtoe/y. Finance channeled towards the geothermal sector was increased, with a stronger emphasis on private sector-led projects, seizing ongoing transformations in the existing regulatory regime which promoted geothermal through IPPs. Indonesia's geothermal resource availability offered unparalleled potential to **scale** within the country, which strengthened the case for placing a stronger bet on this alternative in its private modality.	**Private sector engagement** through ADB's Private Sector Operations Department and IFC, allowed decision makers to gain a better grasp of the risk, needs and potential of the sector, and adjust financial flows within CIF's **theory of change** towards achieving lasting low carbon development.	The **ability to concentrate efforts on a sector with increased potential** was attributed to the flexibility of the programmatic approach. This allows governments and MDBs to adjust investment plans towards sectors that show growing signs of relevance and scaling potential. This can be achieved by effective stakeholder consultation and the creation of powerful evidence-based arguments that can reflect the catalytic potential of investing in one sector vs. another. Openness to adjust an investment agenda in response to the incorporation of new knowledge, offers additional opportunities for ensuring the relevance of interventions.

"Utilization of CTF cofinancing for private sector projects and programs may be able to achieve greater leverage of commercial financing than for public sector projects, as there is opportunity to utilize a wider variety of financing instruments and modalities."

– Revised Investment Plan for Indonesia's CTF, 2013

Key Tools, Methods and Approaches (TMAs)

TMA	Found in
1. Theory of Change, Programmatic Approach and Stakeholder Engagement	Government of Indonesia (2010). *Clean Technology Fund. Investment Plan for Indonesia.* Government of Indonesia (2013). *Clean Technology Fund. Revision of the Investment Plan for Indonesia*.
2. Principles of Blended Finance	[1] Government of Indonesia (2010). *Clean Technology Fund. Investment Plan for Indonesia.* Indonesia. [2] Government of Indonesia (2013). *Clean Technology Fund. Revision of the Investment Plan for Indonesia.* Indonesia. [3] ADB (2013). *Report and Recommendation of the President to the Board of Directors. Sarulla Geothermal Power Development Project.* Indonesia. [4] ADB (2014). *Report and Recommendation of the President to the Board of Directors. Rantau Dedap Geothermal Development Project (Phase 1).* [5] ADB (2016). *Report and Recommendation of the President to the Board of Directors. Muara Laboh Geothermal Power Project.* Indonesia. [6] ADB (2018). *Report and Recommendation of the President to the Board of Directors. Rantau Dedap Geothermal Power Project (Phase 2).*

CAPITAL MARKETS SOLUTION FOR ENERGY EFFICIENCY FINANCING

IDB | MEXICO| CTF

Project Description

Capital Markets Solution for Energy Efficiency Financing is a private sector project intended to develop a project aggregation platform for small scale energy efficiency (EE) initiatives and use capital markets to finance them.

Industry, stores and a wide variety of energy-consuming businesses will participate in this platform through Energy Service Companies (ESCOs). By means of an asset manager, the aggregated savings from these projects will be used to develop a new asset class: a green bond, which through capital markets will mobilize institutional investors at scale. Proceeds from the bond will serve to refinance new EE projects.

Role of the Climate Investment Funds (CIF)

The Climate Investment Funds participated through a US $19 million partial credit guarantee (PCG) from the Clean Technology Fund (CTF). According to an interviewee: "CTF increased the robustness and provided certainty" to this first-of-a-kind investment.

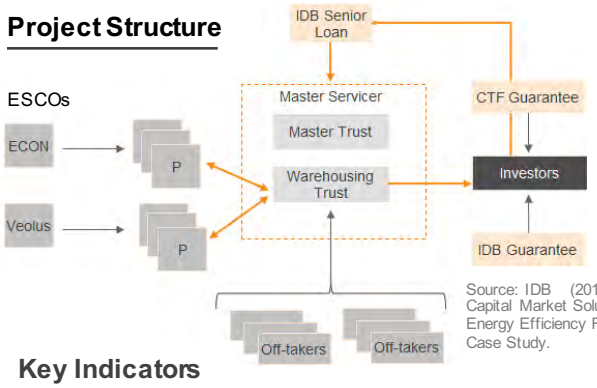
Current Status

As of December 2018 the project finalized its accumulation stage[1], successfully creating a pipeline of EE projects to be financed, reaching the credit line's maximum capacity.

The project is currently initiating the mobilization stage[2], which involves launching the green bond into local capital markets, an event expected to take place during the second semester of 2019.

[1] The accumulation stage is based on an IDB senior revolving loan (warehouse line SPV, up to US $50 million) which will serve to finance, accumulate and standardize EE projects.
[2] The mobilization stage uses one or more partial credit guarantees to support the securitization of the EE projects to be presented in the local or international capital markets.

Project Structure



Source: IDB (2018). Capital Market Solution for Energy Efficiency Financing Case Study.

Key Indicators

Indicator	Target	Achieved
Reduction in energy consumption	At least 15% from the project's baseline	Each project has achieved savings of at least a 15.5%, totaling a reduction of over 95,070 Mwh
Tons of CO_{2e} reduction/ year	An average of 3,000 tCO_2e	1,099,858 $tonCO_2$ (across all reported projects)

Note: Baseline is zero. Source: Climate Wedge information on seven projects formalized by Feb 2019; CO2 reductions are calculated based on each project's lifetime.

Financing

IDB Loan	US $ 50 million senior revolving credit line
IDB Partial Credit Guarantee	$ US 56 million
CTF Partial Credit Guarantee	$ 19 million
Borrower Equity	US $ 12.5 million
Institutional Investors	US $200 million distributed in at least two bond issuances

Design Features with Transformational Change (TrC) Potential

Systemic Change

Capital Markets Solution has **challenged a standard practice** where Local Financial Institutions would only support large energy efficiency projects against the balance sheets of companies implementing them; in this sense, the aggregation of multiple small ESCO-led EE initiatives based on a project-finance scheme, using a model that be attractive to institutional investors, has the potential to **transform investment behavior** in the EE market. Furthermore, its design has internalized an **ability to build credibility** around EE potential, through the constant dissemination of data on EE financial performance.

Scale

The project initially targeted EE projects in cogeneration, but through its **blueprint structure** has been able to attract and fit EE projects from additional segments (e.g. commercial, transportation). Furthermore, **the model's extrapolation to other assets** (e.g. renewable energies, distributed energy) is being explored, which can contribute to reducing carbon emissions beyond the specific market that this investment was designed for.

Sustainability

The revolving nature of the proceeds make **savings feed back into supporting low-carbon investment**. Also, the warehousing trust was designed to be a **self-sustaining body** that could eventually be transferred to a private actor.

"We will be able to demonstrate - in real time - this performance history, every three months the master trust will have to report the performance of the project portfolio."

– María Tapia, IDB.

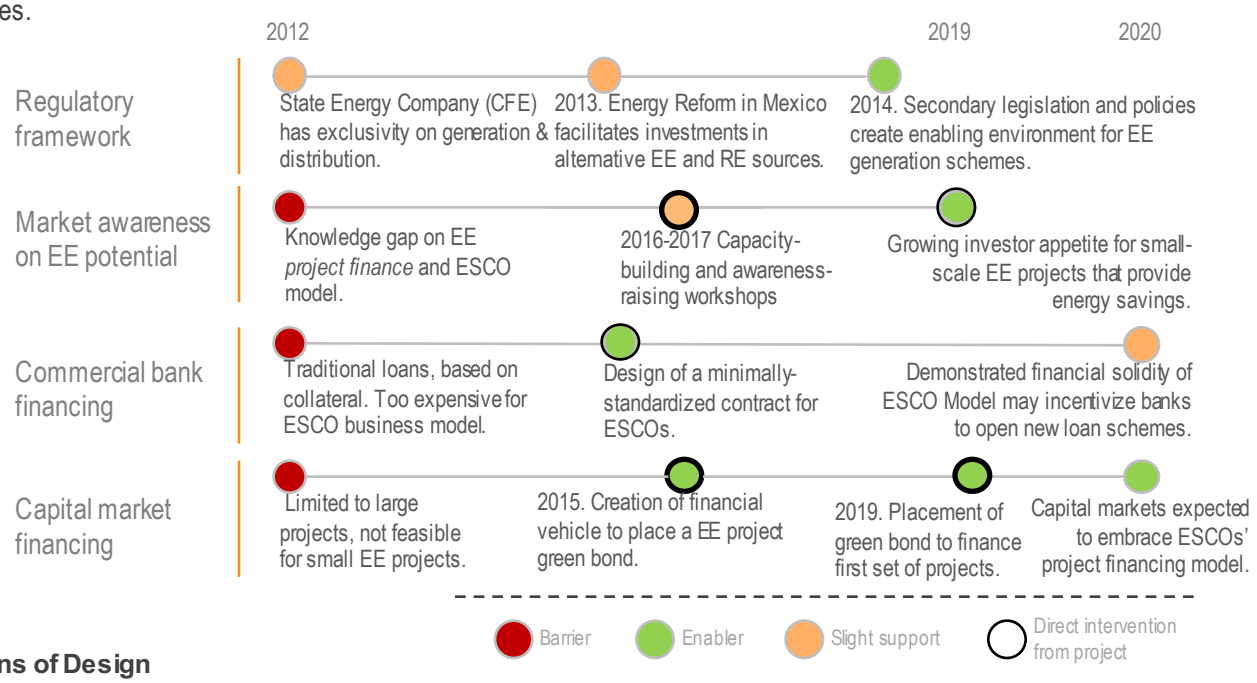
CAPITAL MARKETS SOLUTION FOR ENERGY EFFICIENCY FINANCING

IDB | MEXICO | CTF

Timeline of Coevolutionary Processes

Capital Markets is the first bond issuance backed by energy efficiency receivables in Mexico, with few precedents around the world. Parallel to its development, ground-breaking energy reform took place in this market, creating a mixed environment: on the one hand, appetite for innovation in the Mexican energy sector was stimulated; on the other, lack of supporting secondary regulation forced the project into an impasse.

Throughout its lengthy formulation process, the project has been subject to largely unfavorable market conditions: an artificial drop in electricity prices, together with a volatile exchange rate have had an impact on EE technology imports and the overall rationale behind the vehicle, which initially set to combine both greenfield and brownfield projects. The project has weathered these conditions by rebuilding its pipeline – which now only fits greenfield projects; and by changing its US-dollar credit line to Mexican pesos, helping alleviate exogenous pressures.



Lessons of Design

Transformational Design Features

Challenges and opportunities. Lack of precedents and little knowledge about how an EE-based green bonds model might perform, made it difficult for preliminary studies to grasp the project's full market potential. In the beginning, scope was limited to cogeneration. Later, an appetite was discovered among additional sectors (transportation, ceramics, commercial refrigeration, etc.).

Transformative design towards scale. Through an active dialogue with enterprises mapped during initial market analysis, *Capital Markets* was able to keep itself open and eventually venture into incorporating submarkets that increased industry coverage.

Therefore, the capacity to "think big" about a new financial model's potential application contributed to **scale**, as it expands the possibilities of it being adopted beyond initially targeted market segments.

Relationship to TMAs*

The initial **Market Analysis** mapped interest in the sector of cogeneration, and potential in other sectors as well (refrigeration, public lighting, etc.).

Assumptions about market demand should be realistic in the design of the solution. But the assessment of market potential should also be ambitious and aim towards the greatest scale and replication possible.

Design Takeaways

The **ability to extrapolate the model to other sectors and assets** should be assessed early on through a market analysis and stakeholder consultation. This might better inform the business model design.

Market analyses should allow designers to keep mapping out opportunities for a climate investment beyond the project's initial concept.

CAPITAL MARKETS SOLUTION FOR ENERGY EFFICIENCY FINANCING

IDB | MEXICO| CTF

	Transformational Design Features	Relationship to TMAs	Design Takeaways
2	**Challenges and opportunities**. There were perceptions of risk linked to the concept of a green bond and the ESCO business model. The project faced a knowledge gap and fixed mindsets about available (conventional) strategies to market, assess, and structure energy efficiency projects. **Transformative design towards sustainability and systemic change**. Designers and implementers understood and embraced the need to channel time and resources to explain little-known concepts (e.g. "project finance") and managing preconceived notions (e.g. ESCOs as risk-makers, instead of risk-takers). Through periodic workshops, a diverse array of stakeholders – including local financial institutions–, received training and information to help lessen perceptions of risk. Even within areas of the IDB there was a need to attend these workshops for the product to gain acceptance. These workshops thus served to help **shift mindsets** around what the solution was attempting to achieve, and additionally strengthened local networks to **further support** the project. The sustainability of the green bond is expected to derive from its capacity to crowd-in additional resources (e.g. institutional investors engaged through these workshops, now more confident to buy green bonds). These workshops were considered by project implementers as key elements of possible **systemic change**, by tackling deeply-held preconceived notions and existing knowledge gaps. "It was a preaching mission for us: inside the bank, with institutional investors, bond placers; raising awareness on what is a *project finance* scheme, and how it should be structured." *–Samuel Reyes, ECON*	Through workshops and capacity building efforts, **Stakeholder Engagement** provided a space to change mindsets. To achieve this, workshops addressed all relevant elements of the new model with a tiered approach: a) a *baseline stage*, where a basic common understanding of the energy efficiency technical solutions were laid out,; b) an *advanced stage*, where the financial aspects of the vehicle were explained. Additionally, the **principles of blended finance** helped define a structure that could forcefully leverage private investment through the strategic use of concessional finance. This helped build credibility around the finance of small scale EE projects, changing perceptions and enhancing the credit rating for this product.	The capacity to **challenge standard practices** and **change the way (investment) decisions are made** through a disruptive innovation, often requires sustained commitment to awareness-raising efforts. Such efforts should not overestimate current market knowledge and cover all relevant characteristics of the innovation that may need to be explained. Capacity-building should be geared towards enduring the soft politics of innovation. To this end, knowledge activities must be treated as part of upfront investment, and provided for (financially and time-wise) from the first phases of the project or program.
3	**Challenges and opportunities**. Lack of precedents for a product like a green bond posed risks; on the one hand, it might use as a referent models or standards that were not necessarily applicable to this market's conditions; on the other, starting everything from scratch could make the process overly bureaucratic. **Transformative design towards scale**. Although project design began by using the closest available referents –e.g. U.N. standards on green bonds– the design and preparation phases remained sufficiently open and in touch with stakeholders in order to readjust –e.g. modify unfavorable rates and tailor standards to the particularities of this project–. Implementers sought to make sure the initiative moved at a sufficient pace so as not to lose stakeholder support. This was closely monitored by experts with related experience, in order to avoid failure. In the end it was acknowledged that while referents from outside could be brought to inform project design, the "perfect fit" would only be achievable after the first real-world launch had been made. The project displays early signs of **scale**, since it has created a "blueprint" structure that seems to have achieved a sweet spot in standardization: with sufficient detail to account for the particularities of each EE project, while having enough common ground to aggregate investment. This, brings replication potential in other markets that are facing similar challenges to scale up small EE and RE financing.	Learning-by-doing allowed the project to move forward, despite obstacles that derived from a design initially based on available referents that were not an ideal fit. A **Legal Feasibility Analysis** provided a systematic overview of contract-design possibilities in order to kickstart a conversation about what a new model would look like.	The **creation of adequate blueprint structures** requires some degree of trial and error, since it needs to identify which elements are apt to be standardized and which are not. Projects and programs aiming at transformation will often lack direct referents for their operational and legal standards/conditions. Therefore, in this as in other innovative climate-solutions, experimentation-and-adjustment must be built-in into the process of project preparation, working together with professionals that have related expertise but that can take risks in support for innovation.

CAPITAL MARKETS SOLUTION FOR ENERGY EFFICIENCY FINANCING

IDB | MEXICO | CTF

Transformational Design Features

4 **Challenges and opportunities**. The initial concept for a project to promote energy efficiency initiatives in Mexico (create a credit line for commercial banks to finance EE projects), failed to target aspects that were the root cause for the problem statement.

Transformative design towards systemic change and scale. Through stakeholder mapping and consultations, the project shifted its intended outputs. There was an acknowledgement that the extension of a credit line for EE projects would be insufficient to address the main market barrier. A larger catalytic effect might be achieved by tackling a deep market failure: the short-term and expensive lending schemes that small-scale EE projects were subject to. The causes behind it: high transaction costs, perceptions of risk by local financial institutions and lack of historical data on the financial performance of these type of projects. This re-assessment of the problem allowed for an adjustment of the overall rationale. It hinted the desirability of designing a product that would be able to attract commercial investors, which under the standard financing model had little incentive to participate in projects of such small scale.

Furthermore, project design mainstreamed data generation activities into the solution –since capital markets provide open, verifiable and ongoing data on investment performance, which is expected to have a powerful, credible demonstration effect The creativity of project design to craft a minimally standardized contract, while acknowledging the case-by-case need of energy efficiency initiatives, is proving to be consequential in the success of this new theory of change behind the project. It has potential to facilitate **systemic change**, through an innovative structure that aggregates small scale products, and grants access to finance that is not directly linked to a company's balance sheets, but rather to the technical profitability of a project. This new structure had **scale**, because it had built into it characteristics applicable to many market segments that shared the same market failure.

Relationship to TMAs

Early **Feasibility Studies** and **Stakeholder Consultation** provided key input for re-stating the underlying rationale (**theory of change**) for the project, and agents more likely to exert meaningful change.

Design Takeaways

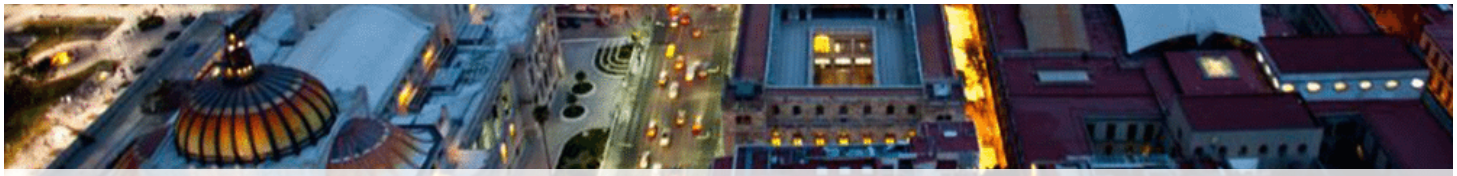
The identification of relevant standard practices that obstruct low-carbon potential should be a key focus of stakeholder consultation, and inform the core projects' rationale.

Problem assumptions should be explicit and examined early on in the project, so MDBs and implementers have enough room to adjust. In projects aiming at profound market transformations, a validation step of the rationale must be incorporated into project preparation timing and resource planning.

Spearheading initiatives should **make powerful analytics a built-in characteristic** of the project execution, to boost their demonstrative effect.

Key Tools, Methods and Approaches

TMA	Found in
1. Stakeholder Consultation	Creara International. (2013). Mexican Energy Efficiency Market Study: An Overview of the ESCO Industry in Mexico . Fairfax, USA.
2. Feasibility Study	Creara International. (2013). Estudio de Eficiencia Energética. Fairfax, Estados Unidos.
3. Market Study	Creara International. (2013). Mexican Energy Efficiency Market Study: An Overview of the ESCO Industry in Mexico . Fairfax, USA.
4. Feasibility Legal Analysis	Baker & McKenzie. (2014). Guía integral de recomendaciones para contratos tipo ESCO. Mexico City, Mexico. (Integral Guide of recommendations for ESCO contracts).
5. Theory of change	IDB (2018). Capital Market Solution for EE Financing Case Study. Washington D.C., USA.



Mexico City at night. Photo credit: Grupo Básica, 2016.

BUILDING CLIMATE RESILIENCE IN THE PYANJ RIVER BASIN

ADB | TAJIKISTAN | PPCR

Project Description

Building Climate Resilience in the Pyanj River Basin (BCR - PRB) is a public sector project in Tajikistan that aims to: (i) create climate-proof small-scale infrastructure for flood protection, irrigation and water supply in the most vulnerable communities in the Pyanj River Basin; and (ii) equip the target communities with the knowledge, financial resources and risk transfer mechanisms to implement adaptation measures. To this end, the project intervenes in 19 *jamoats* or municipalities, where the following interventions have been deployed: flood protection and improved irrigation infrastructure, climate-proof water supply works, and provision of a credit line of micro-loans to promote climate-resilient activities.

Note: Due to the availability of information and stakeholders for consultation, this case study focuses only on components for flood protection and improved irrigation.

Role of the Climate Investment Funds (CIF)

Through the Strategic Climate Fund, the CIF provides support to demonstrate approaches to increase climate resilience in Tajikistan. Funds during a first phase were used to carry out a study that showed how communities located in the Pyanj River Basin are already experiencing extreme climatic events (*Climate Resiliency for Natural Resources Investments*); in a second phase, they are being used to finance aforementioned activities, as part of the Pilot Program for Climate Resilience (PPCR).

Current Status

Components related to flood protection and irrigation have reached a disbursement of over 83%; most concluded work involves flood/mud flow protection infrastructure and modernization of pumping stations. Ongoing work includes the cleaning of the Roharv riverbed and reconstruction of some infrastructure such as the Bovid syphon. The construction of a drip irrigation demonstration site has presented significant delays; for this subproject, contracts have already been signed and construction work is underway.

Rehabilitation of water infrastructure in Dahana, Kulyab. Source: 2 Quarter 2018 Report by PMO SUEKMK

Key Indicators

Indicator	Target	Achieved
Irrigated land protected from erosion (ha)	321	4,737
Land with improved irrigation (ha)	480	517
Arable land with ensured supply of irrigation water (ha)	1,450	1,561
Disaster Risk Management Plans (number of jamoats with a plan)	10	10
Establishment of disaster risk management committees (number of DRMCs)	17	17[a]
Training on disaster risk management (number of people)	500	563
Capacity building for local ALRI officials, communities and disaster risk management committees	NA	A 2015 - 2018 Action Plan has been prepared.

As part of DRMCs, 113 mobile phones have been distributed for early warning systems.
Note: baselines are zero. Source: PMO 3 Quarter Report 2018, complemented through interviews.

Financing

Strategic Climate Fund	US $21,550,000
Government of Tajikistan	US $2,390,000
Partern institutions for micro-finance component	US $770,000
Total	US $24,500,000

Note: financing shown here refers to all components in the BCR-PRB Project.

Design Features with Transformational Change (TrC) Potential

Relevance

The coupling of brick-and-mortar solution with a capacity-building component directly **addressed two of the most salient challenges** for climate resilience in the Pyanj River Basin: a chronic infrastructure backlog, and the need for local technical capacities to take ownership over climate change responses, shifting expectations away from central government.

Sustainability

The **leveraging of existing local resources** to form Disaster Risk Management Committees (DRMCs), has been successful in building capacity and creating engagement, showing early signs of being sustainable over time due to its use of existing social organizational networks and low implementation costs.

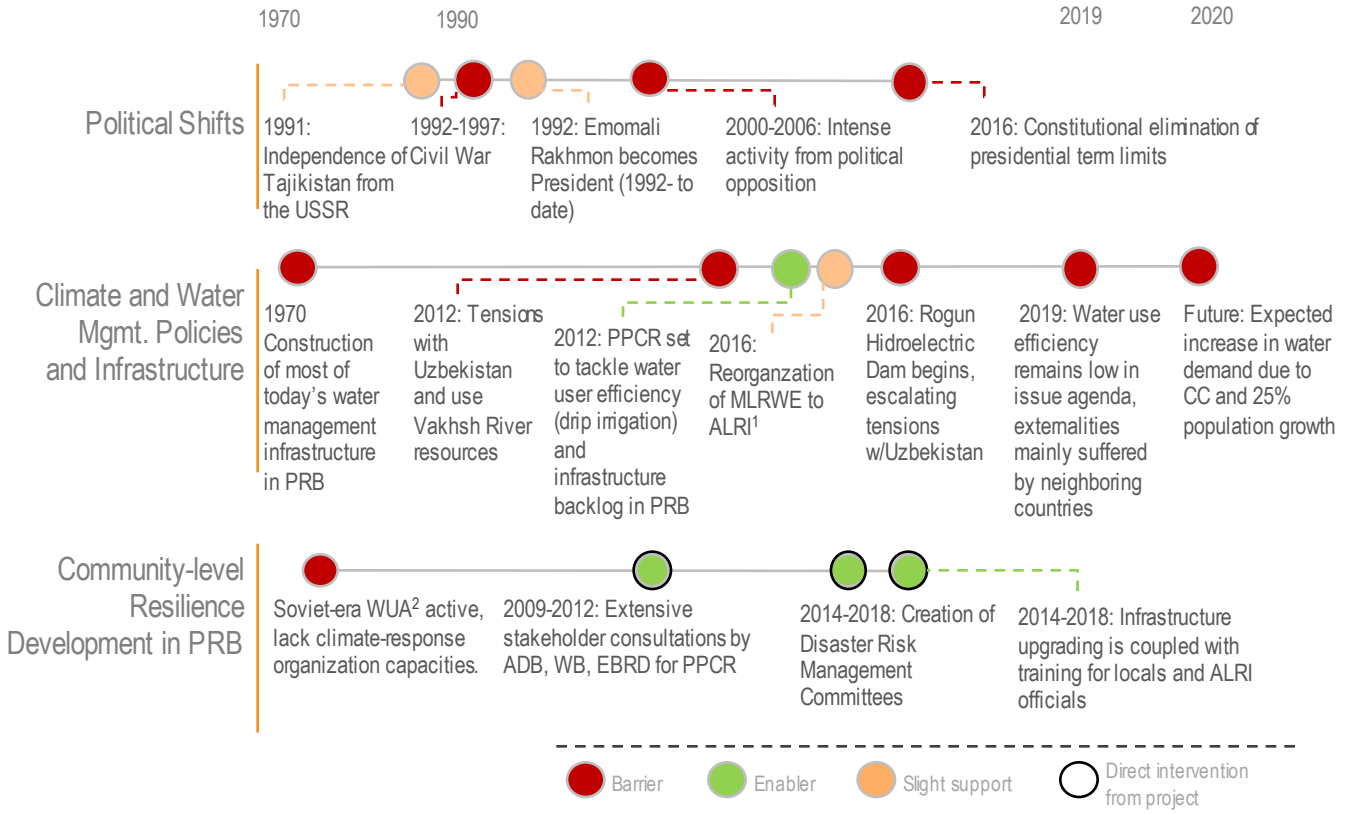
BUILDING CLIMATE RESILIENCE IN THE PYANJ RIVER BASIN

ADB | TAJIKISTAN | PPCR

Timeline of Coevolutionary Processes

Tajikistan is one of the poorest and most vulnerable economies in the world; due to lack of opportunities, a large portion of the workforce (≈40%) migrates for employment. In many aspects, there is still a strong dependence in a central government that has carried forward practices from the soviet era. Because of poverty and political strife, infrastructure and technology development in rural communities is lagging; this adds to an already exceptionally high vulnerability to climate change and is aggravated by the fact that most population in this mountainous country lives on flood plains, highly exposed to mudflows and flash floods.

This PPCR project is one of several efforts supported by international donors to build adaptation capacities and resilience in the country; it has sought to update infrastructure and strengthen self-help models of response to climate change in one of the most vulnerable basins of Tajikistan. During its development, the country has seen some periods of social unrest and tensions over water use with neighboring countries. Institutional and regulatory frameworks for climate resilience are still under development, which has made it difficult for the BCR-PRB to link itself to high-level climate readiness in the broader context of Tajikistan.



[1] MLRWE: Ministry of Land Reclamation and Water Resources of the Republic of Tajikistan; ALRI: Agency of Land reclamation and Irrigation
[2] Water User Associations

"For something innovative you need to do more groundwork, to build from the bottom up. […] Engaging with the local population and explaining what the project was trying to do and why … it was the right way to do it, rather than have an externally-imposed solution"

- Steve Parsons, lead consultant to the BCR-PRB project

BUILDING CLIMATE RESILIENCE IN THE PYANJ RIVER BASIN

ADB | TAJIKISTAN | PPCR

Lessons of Design

Transformational Design Features

1 **Challenges and opportunities**. Communities in the Pyanj River Basin are highly vulnerable to climate-related disasters, which routinely result in deaths, crop-loss and infrastructure damage. Although aware of these problems, communities lack organizational means to communicate and effectively respond.

Some local organizations inherited from the communist-era farms include Water User Associations (WUAs), *khashar* (mutual self-help groups), *mahala* (neighborhood associations), and women committees; these are still actively involved with communities on the ground, but lack climate-response capacities.

Transformative design towards sustainability. Project designers leveraged existing social organizations and networks in order to identify key needs for a successful implementation of disaster risk prevention activities. Conversations with these stakeholders and with social administrators on the ground, allowed them to identify the need to improve the capacity to quickly disseminate information among the community in the event of flood, and validate the feasibility of doing so through the provision of training and telecommunication devices.

This gave way to the development of Disaster Risk Management Committees (DRMCs), composed of approximately twelve people each; as part of the project activities to establish an early warning system, these committees were: a) trained to quickly respond to signs of flood; and b) equipped with low-cost cellphones to alert the rest of the organization. So far, a total of 17 DRMCs (the set target) have been established. Stakeholders consider this DRMC model is likely to scale up since implementation requires little upfront investment, rather relying on organization and training activities with local communities.

Relationship to TMAs*

DRMCs resulted from an early **stakeholder consultation** which was able to identify and leverage existing networks and design an intervention that addressed key communication and organizational barriers faced by flood-prone communities.

A continued **stakeholder engagement process** throughout implementation engaged local social administrators, which allowed DRMCs to successfully gain commitment from the community and thus provide sustainability to their operation. The low-cost early warning mechanism that resulted from these dialogues, seems to have some potential to scale up towards neighboring communities and river basins.

Design Takeaways

The **leveraging of existing local organizational structures** to build and nurture climate-response capacities, reflects the bet of this PPCR project on shifting mindsets from reliance on the central government, towards getting communities to focus on self-help, which contributes to the long-term sustainability of the early warning system component.

To the degree that climate resilience interventions can improve the local understanding of what resilient measures seek to facilitate, local stakeholders will in turn be more able to identify and communicate their needs for boosting resilience and sustaining measures through time.

"The project was designed to develop the abilities and experiences specific to Tajikistan, highly influencing the development of the necessary process to raise climate change resilience. […] This evolving approach was very important for the project."

– Nasib Karimov, Director of Project Management Unit (PMU)

Pyanj River in the Tajikistan Border. Source: NA, 2016.

BUILDING CLIMATE RESILIENCE IN THE PYANJ RIVER BASIN

ADB | TAJIKISTAN | PPCR

Transformational Design Features

2 **Challenges and opportunities**. Riverside communities such as those in the Pyanj River Bain are prone to mudflows, floods, landslides and rock falls. This is due to their exposure to extreme weather events, as well as to a severe backlog in water and flood-management infrastructure. Mudflows and floods result in physical damage, low agricultural yields and erosion in some parts of agricultural land.

Transformative design towards relevance. The project introduced modern earth-moving machinery to carry out physical interventions in vulnerable communities and build bank protection infrastructure. Unforeseen low civil engineering costs allowed an optimization of resources allocated to this component, resulting in outcomes that exceeded initial expectations (see: key indicators).

This solution resulted to be an easy and quick way to address an immediate community need and was particularly successful in that construction and maintenance activities were coupled with capacity-building efforts. A space was created for international consultants to transfer specific knowledge to local teams: how to address environmental considerations, workforce care, handling of the equipment in the long term, among other aspects local contractors were unfamiliar with.

This linkage between the bricks and mortar intervention and the awareness it facilitated on the ground, is regarded by project implementers as a valuable formula: both to strengthen local physical capacities; and to change mindsets around the possibilities to build resilience at a community level, which is important given the lack of high-level policies, regulations, and investment programs to support climate resilience in the country.

Relationship to TMAs

The stakeholder engagement that accompanied machinery deployment was successful in using the investment in physical infrastructure to strengthen institutional capacities as well. In this sense, infrastructure acted as a vehicle to begin shifting mindsets around local agency over responses to climate change.

Perhaps a more specific **stakeholder consultation** before the start of implementation, aided by a detailed **cost-benefit analysis**, could have hinted that this component would be highly relevant and scalable in the context of BCR-PRB, so as to create a more central role for it.

The **theory of change** and corresponding **results framework** for the project did not account for training and capacity building as part of the official monitoring and KPI for the project. Therefore, reports on these activities by government officials were not required, reducing incentives to make training a more salient aspect of the project.

Design Takeaways

The **capacity to address the most salient challenges for climate resilience in a direct and cost-efficient way**, might benefit from more detailed economic analysis and stakeholder consultations, and perhaps also by introducing some flexibility in resource allocation.

It is critically important that all activities considered to be relevant to the context, no matter how simple they seem (e.g. capacity building for machine maintenance) are not taken for granted and rather are made explicit in the results framework of the project.

"Giving equipment to the local offices for the maintenance has been an important feature already. Building from the local towards the central, and building the work we did with the WUA and the DRMC [were the best ways to do promote resilience]."

– *Steven Parsons, lead consultant to the BCR-PRB project*

Embankments along the Pyanj River in Hamadoni District Source: : Nozim Kalandarov/ADB

BUILDING CLIMATE RESILIENCE IN THE PYANJ RIVER BASIN

ADB | TAJIKISTAN | PPCR

3

Transformational Design Features

Challenges and opportunities. In Tajikistan, agricultural production is a large sector of the economy. According to climate change (CC) vulnerability assessments, this activity may be threatened due to projected reductions in water availability attributable to CC in the upcoming decades. Currently, most of the installed irrigation and drainage (I&D) facilities are in poor conditions and depend on outdated technologies; among them, water pumping stations in particular have been proved to cause high inefficiencies and expense. Communities in Tajikistan can rehabilitate existing infrastructure –which economic assessments have deemed low cost-effective– or opt for alternative technologies to improve water use and supply.

Design barrier. The project has not been able to tackle this challenge in a transformative way. It has proposed what seems like a technically relevant solution: drip irrigation, meant to provide an economical alternative for communities, through technology set to increase productivity and reduce water needs.

Nonetheless, this component has not yet been implemented due to reluctance from local officials and communities to allow drip irrigation on their fields. When the drip irrigation pilot was meant to start, they advocated for the use of available resources on rehabilitation of a pumping station instead, a matter that has delayed the component for two years. Events led to the reduction of the scope of the drip irrigation pilot project, in favor of the rehabilitation the pumping station.

According to interviewees, the project should have increased the involvement of farmers and local politicians immediately before implementation. This would have allowed to either: a) develop awareness, incentives and more effective methods of explaining the rationale behind drip irrigation; or b) select another site more apt to support drip-irrigation and achieve the desired demonstrative effect.

Relationship to TMAs

The **stakeholder engagement plan** was robust in assessing interventions at a feasibility (high-level) stage, but it lacked activities inside the communities and with the local government officials belonging to the specific sites of intervention.

Facilitating consensus around technically-relevant climate solutions, would have required stakeholder involvement that made these solutions socially-relevant as well.

Design Takeaways

In order to implement technically-relevant solutions, interventions must be made socially-relevant a well.

Particularly when projects aim to introduce innovations or solutions unfamiliar to local communities, it is important to properly assess existing perceptions from end beneficiaries and find ways to gain their support, regardless of the solution's cost-effectiveness on paper.

Key Tools, Methods and Approaches

TMA	Found in
1. Theory of change	Buckle et.al. (2011). Republic of Tajikistan: Climate Resiliency for Natural Resources Investments. ADB TA-7599 TAJ.
2. Sector Assessment	WYG International LTD; PRIMEX Inc.; Met Office Hadley Centre (2013). Technical Assistance Consultant's Report.
3. Climate Change Vulnerability Assessment	
4. Results Framework	
6. Stakeholder Consultation	

FINANCIAL PRODUCTS TO PROMOTE CLIMATE CHANGE RESILIENCE

IDB | BOLIVIA | PPCR

Project Description

Financial Products to Promote Climate Change Resilience in Bolivia ("Financial products" from here on) is a PPCR private sector set-aside project, which is a scaling-up operation of the EcoMicro Project[1] *Green Finance for Climate Change Adaptation* ("EcoMicro project" from here on). The implementer of both projects is Diaconía, a Bolivian Development Finance Institution (DFI).

The project's objective is to improve climate change resilience of small-scale agricultural producers. To do so, Diaconía offers agricultural loans packaged with technical assistance to invest in adaptation measures, as a way to help stabilize and boost rural productivity.

[1] The EcoMicro *Program* (IDB/MIF - Nordic Development Fund – Global Affairs Canada), funded eight EcoMicro *Projects* in Latin America, all focused on green finance for MSMEs & Low Income Households.

Role of the Climate Investment Funds (CIF)

Through the Pilot Program for Climate Resilience (PPCR), the CIF contributed a US $4 million concessional loan to the *Financial Products* project. The loan will be used to expand the resilience product created through IDB's EcoMicro.

Current Status

The EcoMicro project (pilot phase) was completed in December 2017, meeting its set targets. Credits remained on the market throughout 2018, and are planned to be scaled up during the first semester of 2019, through the *Financial Products* project supported by the CIF.

Producer in Sorata, next to a seed shelter built with technical assistance tied to the credit for climate resilience. Photo by C230 Consultores.

Key Indicators

Indicator	Achieved 2017[a,b]	Target 2019[c]	Target 2023[c]
People with access to resilience loans	300	1,000	4,000
People adopting resilient practices technologies	200	800	3,200
Branch offices offering loan	3	8	8

[a] Baseline is zero. Defined as part of the *EcoMicro Project*, not the *Financial Products*.
[b] Source: interview with Claudia Daza, 16/01/2019
[c] Loans and practices adopted during the previous project do not count towards this target.

Financing

PPCR, Loan	US$ 4 million
Multilateral Investment Fund - MIF (IDB), Loan	US$ 1.5 million
Diaconía FRIF - IFD, Equity	US$ 1.5 million

Note: The *EcoMicro project* that preceded *Financial Products* was supported by IDB through a technical assistance (TA), and by the LDI PROFIN through a US$ 300,000 loan.

"There were no microfinance products in the country that support producers in the adoption of climate change adaptation measures [like this one does]. 'Green' products usually request only that pollution levels are low."

– Claudia Daza, Project Lead, Diaconía

Design Features with Transformational Change (TrC) Potential

Relevance — Among competing solutions to promote green finance solutions, *Financial Products* **strategically focuses on a high-potential market** for privately-financed climate adaptation in Bolivia**, through a capable innovation-driven provider**.

Systemic Change — The project provides **new institutional arrangements to bridge agricultural and financial knowledge** into a single solution: a micro-credit that places incentives for farmers to change conventional practices and adopt climate-resilient measures in their productive processes.

Scale — The **expansion of the product is made highly feasible** through a model that leverages local resources and uses simple measures explained with lay terms to promote climate change adaptation.

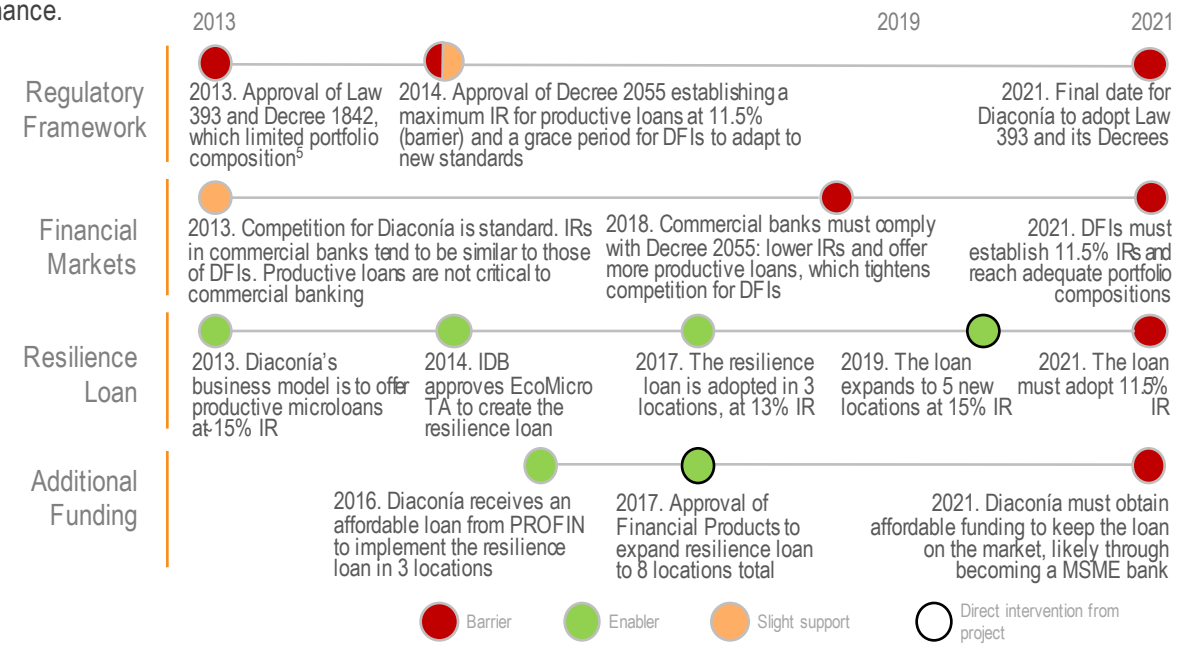
Sustain-ability — The product has achieved **sustained commitment from target populations and profitability**, as reflected in a near-zero loan delinquency rate. Also, the implementer has shown ability to **adapt to adverse regulatory changes**.

FINANCIAL PRODUCTS TO PROMOTE CLIMATE CHANGE RESILIENCE

IDB | BOLIVIA | PPCR

Timeline of Coevolutionary Processes

Financial Products is breaking ground as the first agricultural microcredit to reach highly dispersed farmers in Bolivia and help them maintain or improve their income through the application of climate-resilient farming measures. The project has navigated the consequences of Law 393 for Financial Services, which toughened competition for productive credits by establishing a fixed maximum interest rate (IR), with a direct impact on the initial business model for the product. Despite this, the implementation of the pilot has validated market appetite for the product and proved the model's capacity to adapt, leverage local networks, and acquire additional finance.



[5] Decree 1842 required at least 60% of the credit portfolio of commercial banks to consist of productive and affordable housing loans (and at least 25% of productive loans).

Lessons of Design

Transformational Design Features

1

Challenges and opportunities. The Latin American market lacked precedents of resilience-based loans for the agricultural sector. Furthermore, past attempts to link financial loans to Technical Assistance (TA) had faced obstacles (i.e. unclear liability for investment loss or failure). Within the implementing agency, no institutional or knowledge links existed between financial advisors and technical advisors. These factors created uncertainty, skepticism, and lack of clarity in terms of how such a product would play out.

Transformative solution towards systemic change. The product had a pilot phase of limited scale that provided room for experimentation. This allowed to verify market absorption and adequacy of the adaptation measures in different contexts: three locations were chosen for the pilot, based on their potential to represent different ecosystems in Bolivia. Through trial and error, different roles within the project were iteratively scoped and defined: financial responsibilities were assigned to financial advisors, technical assistance responsibilities to "strategic allies" (local universities), while the final decision on adaptation measures was placed clearly upon the beneficiaries. The combination of finance and agricultural adaptation know-hows and alignment of their roles, signals potential **systemic change,** as it addresses knowledge and institutional gaps to make a product like this one feasible.

Relationship to TMAs

The **"Pilot-and-Demonstration" Approach** embedded in IDB Lab's (previously MIF) EcoMicro program–at least in the case of Bolivia– allowed the project to test its main assumptions before deploying on a larger scale.

This approach allowed some inevitable "small fails" to happen, which served to strengthen the product in the long run (as opposed to "big fails" which might have inhibited further development.)

Design Takeaways

New institutional arrangements to bridge agricultural and financial knowledge were made possible by the fact that, as a pilot project, *Financial Products* had a small scale and room to test initial, desk-based, hypotheses.

The "safe space" provided by the pilot project allowed it to further define roles, assign responsibilities, and design aspects of the product. This made it possible for each actor to fully understand their own risk (and mitigate it) before the innovation was fully deployed.

FINANCIAL PRODUCTS TO PROMOTE CLIMATE CHANGE RESILIENCE

IDB | BOLIVIA | PPCR

Transformational Design Features

2 **Challenges and opportunities.** The project required a simple and relatable narrative to effectively offer a climate adaptation product to rural farmers. Communicating climate change, and the financial rationale behind the product, was a complex feat: it risked alienating farmers if concepts used were perceived too detached from local realities. Such a risk was increased by an initial, internationally-sourced market analysis that presented a pre-packaged catalogue of 18 climate resilience measures that were detached from local realities (e.g. not sensible to harvesting cycles in Bolivia). Similarly, initial design hinged on a general modelling software used to predict yield performance under different climate scenarios but required additional grounding and adaptation to local circumstances.

Transformative solution towards sustainability and scale. A threefold strategy based on: 1) A site-based market feasibility study that validated beneficiaries' interest and likelihood of adopting the financial product; 2) Context-sensitive technical assistance that linked resilience measures to simple climate change impacts that farmers were already aware of and could relate to; 3) Integration of students and recent graduates from local universities as the agents to provide technical assistance and follow-up.

These supporters from *Unidades Académicas Campesinas,* (many of whom belong to the beneficiaries' farming communities) were a valuable resource to be leveraged. Through them, the project was well-grounded in farmers' realities and able to provide low-cost continued involvement with target populations. According to Diaconía, this deep on-site engagement generated loyalty and commitment from beneficiaries, helping the model achieve a loan delinquency rate close to 0%, and contributing to overall **sustainability**.

According to stakeholders, the low level of complexity in technical assistance increases the likelihood of this model to achieve a larger **scale** in additional locations because technical universities with this level of installed capacity can be found in several other sites in Bolivia.

Relationship to TMAs

The initial **Market Analysis** was amended by the local implementer (Diaconia) through a **Feasibility Study**, which tailored the adaptation measures to local preferences and characteristics (including region-specific climate risks, idiosyncrasies, available technologies, explicit interest from target populations).

Effective **Stakeholder Consultation** and strategic alliances with local universities helped design palatable communication materials for supporting implementation activities. This generated co-benefits for local students, seized social networks, and drove down costs.

Design Takeaways

Sustained commitment from target populations may be more likely to be achieved if pre-existing social networks and local resources are used in the business model of a solution.

The capacity to tailor interventions to site-specific context and resources, can be provided by an implementer with experience and relationships in the local market.

Especially when getting ready to launch an innovative climate product, it is key to go beyond validating demand. Meaningfully engaging with end users early-on can allow project leads to tailor design features and messages, optimizing adoption.

Changing behaviors can be easier to achieve through slight changes or adjustments in standard practices. This as opposed to externally-sourced radical measures that, even though successful in other contexts, can be harder for end users to comprehend and adopt.

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3 **Challenges and opportunities.** The product faced an unforeseen challenge driven by the enactment of Bolivia's new Financial Services Law and its regulatory decrees. This threatened the projects' business model: it forced increasingly competitive rates on a product that was designed under different assumptions: head-to-head competition with commercial finance was beyond product's initial scope.

Transformative solution towards sustainability. In the short term, Diaconía was able funds from the local foundation PROFIN, which helped keep its interest rate within a competitive range, despite regulatory changes. In the medium and long term, Diaconía has taken up the aforementioned challenge as an opportunity: it is currently assessing whether to migrate from a DFI into a MSME bank that can fund itself through client's savings, thus improving the financial model for the product. This resourcefulness and ability to adapt to exogenous regulatory circumstances is considered by stakeholders to exemplify a feature of **sustainability** in the project.

A **Risk Assessment** identified the possibility of regulatory changes early-on during the project.

In this case the Risk Assessment did not lay detailed risk-mitigation strategy at the outset. It adapted a conditions developed, and up this point has been able to navigate the new regulatory environment.

The **ability to adapt to adverse regulatory changes** is closely related to the resourcefulness and market experience of the local implementer.

In cases where the likelihood of policy or regulatory shifts is high, risk assessments should identify the resources to be tapped, and concrete strategies to be followed to ensure resilience.

FINANCIAL PRODUCTS TO PROMOTE CLIMATE CHANGE RESILIENCE

IDB | BOLIVIA | PPCR

Transformational Design Features

4

Challenges and opportunities. Finding strong and resilient local partners to develop innovation niches can prove difficult –and at times expensive – for MDBs, particularly in small emerging markets.

Transformative solution towards relevance, scale, and systemic change. Diaconía was selected through the EcoMicro program: a competitive, innovation-driven, regional call to tender which sought to support front runners in innovation. The program was focused on the development of green finance solutions, an was open to a wide range of variants within this category. Its thematic and regional amplitude spurred competition and allowed IDB to select solutions considered to be comparatively **relevant**. Its regional scope also generated opportunities for **scale**, through knowledge sharing among beneficiaries of Ecomicro.

From its conceptualization, EcoMicro targeted leadership for niche development, and pre-identified the potential of Micro Finance Institutions (MFIs) as key partners in crafting out-of-the-box solutions, often unattractive to conventional market players.[6] As a result of this approach, IDB identified a strong partner with the necessary know-how and risk-appetite to create a commercially viable, resilience-oriented financial product in Bolivia.

Two features from Diaconia, the local implementor, stand out: 1) capacity to leverage local networks that proved valuable for the project's **sustainability** in the face of adversity (including allies such as PROFIN and *Unidades Académicas Campesinas*); and 2) a willingness to embrace institutional change. The latter refers to actions by the Executive Board to change Diaconía's business culture: a re-training program on the importance of climate change adaptation for clients, paired with the adoption of commitments (e.g. reducing personnel's carbon footprint), has been important to trigger further **systemic changes** within their operations (e.g. introducing agricultural and climate change considerations to their sale operations and strategic growth plans).

[6] Within the project's rationale, MFIs were targeted as they were considered to have a history of launching projects first perceived complex and unprofitable, and to have proven capacity to be flexible and efficient in delivering their social mission.

Relationship to TMAs

EcoMicro's tendering process generated input most often obtained through a **Stakeholder Analysis**, such as mapping key potential implementers and analyzing their institutional capacities. Its open nature allowed IDB Group to gather valuable information without directly investing in research –having it provided directly by interested applicants. Also, by being a regional call to tender, the number of proposals allowed selectivity, to identify players with the best capabilities to lead intended innovations.

Design Takeaways

The capacity to strategically focus on a high potential market and a capable innovation-driven provider was facilitated through competition. Resourcing projects from large regional pools can promote relevance in project and partner selection, with strict(er) criteria for funding innovation.

Local partners must ideally have capacity to leverage resource networks and a demonstrated openness to institutional change.

Producers harvesting peppers from improved seeds acquired through the loan. Photo by C230 Consultores.

Key Tools, Methods and Approaches (TMAs)[7]

TMA	Found in
1. Market Analysis	Frankfurt School of Finance & Management (2014). *Estudio de Mercado*. Frankfurt, Germany
2. Amended market analysis with feasibility study	Diaconía FRIF - IFD (2016). *Informe de Validación de la Demanda de Medidas de Adaptación al Cambio Climático*. La Paz, Bolivia
3. Stakeholder consultation	Frankfurt School of Finance & Management (2014 & 2015). *Estudio de Mercado & Estudio de Vulnerabilidad y Mapeo de Riesgos Climáticos*. Frankfurt, Germany; Diaconía FRIF - IFD (2016). *Informe de Validación de la Demanda de Medidas de Adaptación al Cambio Climático*. La Paz, Bolivia
5. Risk assessment	IDB. (2014). Documento para Aprobación del Proyecto. Proyecto Ecomicro de Diaconía – Financiamiento Verde para la Adaptación al Cambio Climático (BO-X1011). Washington D.C., US
5. Modeling software platform	UNDP; Frankfurt School of Finance & Management; Diaconía FRIF - IFD (2016). Herramienta para Evaluación de Crédito Agropecuario y Riesgo Climático. La Paz, Bolivia

[7] Since the *Financial Products* project is a scaling-up of a previous effort, TMAs used for the *EcoMicro* project are considered within those used for *Financial Products*. Methods and documents presented were selected on the basis of their relevance for the design of the intervention, as communicated by stakeholders through interviews.

PREPARING OUTER ISLANDS FOR SUSTAINABLE ENERGY DEVELOPMENT

ADB | MALDIVES | SREP 93

Program Description

Preparing Outer Islands for Sustainable Energy Development (POISED) is a public program that introduces solar PV and energy efficiency measures into electricity grids of the outer islands in the Maldives. The objective is to help develop solar-diesel hybrids, through physical investments in RE equipment, energy management and control systems, storage, and improvements in distribution. The project initially targets 5 sample islands for its pilot program (2014), with a plan to scale up to 160 (2021).

The project's implementing agencies are the **Ministry of Energy and the Environment** (**MEE**) and **FENAKA** and **STELCO**, the two main energy utilities in Maldives.

Climate Investment Funds' Role

The CIF contributed with a **US $12 million grant** from the **Scaling-Up Renewable Energy in Low-Income Countries Program** (SREP) to cover upfront costs of solar energy, facilitating the longer-term transition to a **carbon neutral economy**.

Current Status

- Phase 1 covers five pilot islands. All project activities were completed in 2017.
- Phase 2A covers 14 islands. Project work started in 2017. Currently, energy management systems need to be connected before handover to Fenaka.
- Phase 2B covers 13 islands. Contract award will start by 2019.
- Phase 3 covers 26 islands. Project work is on-going with 70% of the activities completed.
- Phase 4 covers 24 islands. Project work is expected to start by early 2019.

FENAKA Director of Technical Services and Green Energy, Abdullah Nashith, and FENAKA Baa Atoll Goidhoo Senior Plant Technician, Mohammed Naseem demonstating solar panel energy savings. Photo by C230.

Key Indicators

Indicator	Target	Achieved[a]
Electricity output from RE (GWh)	27.6	3.3
Capacity from RE (MW)	21	2.1
No. of beneficiaries (households)	4,600	3,669
GHG emissions avoided (tCO2e)	40,000	5,340

[a] Achieved Indicators are for the year 2017.

Financing

SREP, Grant	US$ 12 million
Asian Development Bank (ADB), Grant	US$ 38 million
European Investment Bank (EIB), Loan	US$ 50 million
Islamic Development Bank, Loan	US$ 10 million
Government of the Republic of the Maldives	US$ 14 million

Source: ADB Documents.

Design Features with Transformational Change (TrC) Potential

Relevance

POISED was able to **strategically target low carbon development as a country priority** through its linkage with concerns around energy security and the buy-in from leaders in complete energy systems (including the EE of diesel-based equipment).

Systemic Change

Local mindsets are shifting from a state where island Councils avoided being "risky experiments for RE" and are now interested in becoming "modern and progressive" due to the installation of PV.

Scale

Through typology-based demonstrations, the project has created evidence that a wide range of islands can relate to, effectively **creating an appetite for implementation** despite the diversity of local conditions.

Sustainability

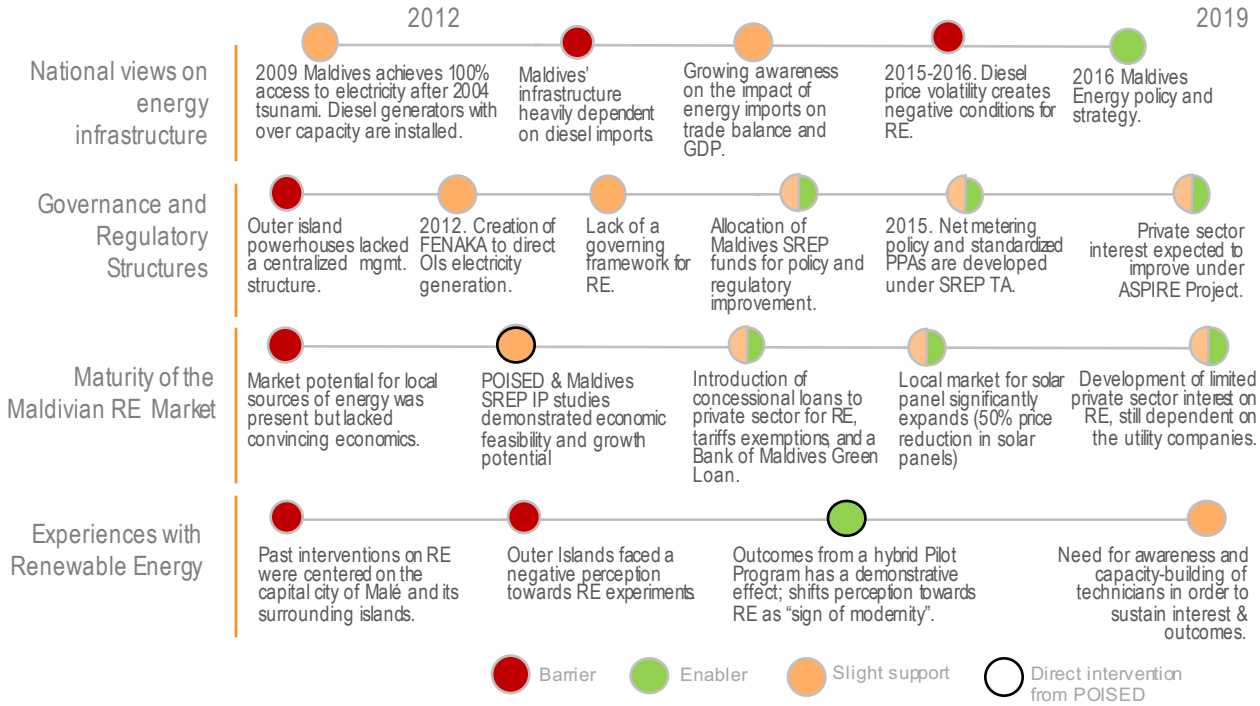
POISED implemented activities through a predominately technical organization, a utility that was young and relatively **shielded from political shifts**; a short feedback loop in its institutional arrangements with the management unit, made implementation agile and **responsive to changing circumstances**.

PREPARING OUTER ISLANDS FOR SUSTAINABLE ENERGY DEVELOPMENT

ADB | MALDIVES | SREP 94

Timeline of Coevolutionary Processes

POISED has had to face skepticism towards the appropriateness of RE in the Maldives. Part of the challenge has been that existing infrastructure for diesel-generated base load was designed with over-capacity, with an impact on the overall performance of systems that incorporate RE solutions. The program also needed to navigate the volatility of the global energy market –particularly the impact of diesel prices on the relative cost-competitiveness on RE. Lastly, during the lifetime of the program, several shifts in government took place, giving way to societal and economic reforms. Nonetheless, the program has been successful in pairing RE development with more efficient diesel infrastructure, and has leveraged government interest in energy security.



Lessons of Design

Transformational Design Features

1 **Challenges or opportunities**. In 2012, seven regional utility companies merged into a single entity: FENAKA. This organization had technical capabilities, presence in the islands, and an ongoing relationship with the Ministry of Environment and Energy. FENAKA was selected as part of the implementing agencies, responsible for coordinating all aspects of the transactions with the Island Councils (ICs) and City Councils (CCs).

Transformative design towards sustainability. The Project Management Unit established a Steering Committee with two permanent members from energy utilities stationed at MEE's offices. Along with consultants, this committee monitored progress. FENAKA was able to communicate, in a prompt and timely manner, aspects related to local stakeholders, engineering and administration issues on site, and needs of the project on a daily basis. Periodic interactions and a roadmap for phasing the plan in the outer islands was made possible through these arrangements.

Relationship to TMAs

Institutional arrangements reflected in the **Project Administration Manual** (and stemming from **prefeasibility** activities) endowed POISED with a more effective organizational structure for implementation.

Design takeaways

Implementation was agile and **responsive to changing circumstances** thanks to short feedback loops in institutional arrangements, which avoided bureaucratic delays.

Some actors assert that the project was **relatively shielded from political shifts** due to the important responsibility placed directly on the predominantly technical utility.

PREPARING OUTER ISLANDS FOR SUSTAINABLE ENERGY DEVELOPMENT

ADB | MALDIVES | SREP 95

Transformational Design Features

2 **Challenges or opportunities.** Hesitation towards renewable energy (RE) projects was a key barrier to overcome in the Maldives. RE large-scale deployment was being hindered by past attempts that had aimed for radical changes in the energy mix, and where unintended consequences set negative precedents[1]. This created mindsets of skepticism and distrust towards the idea of further experimentation with these technologies. This was true both for government and for communities, the latter not wanting to be "guinea pigs" of potentially unsuccessful projects.

Transformative design towards relevance and systemic change. The project's due diligence incorporated lessons learned from past attempts and acknowledged that aiming for 100% RE systems was not feasible due to the over capacity of current diesel-based systems, social perceptions, and climate conditions. The project adopted a "holistic approach" that brought in expertise not only from the field of renewable energies, but from the wider energy industry, which looked at the system as a whole and proposed improvements to diesel-based generation, thus reducing operating costs regardless of the RE solution. This allowed the engineering of wholesome hybrid solutions that appealed to different audiences (including detractors of RE) and address perceptions of risk. This seems to have laid the groundwork for future, more ambitious adoption of RE.

In addressing government's hesitations, the generation of powerful evidence to create buy-in was key. Economic analysis allowed to showcase potential diesel savings throughout the lifespan of the project, giving way to the establishment of demonstrable link between RE development and energy security in the Maldives, which was a **key government priority**. This played a role in shielding the project form frequent political shifts during implementation: incoming administrations had a clear picture that in order to lessen the economic burden of diesel imports, development of renewable energy sources could be further promoted.

In addressing communities' hesitations, a pilot-and-demonstration approach was applied which provided relatable examples of successful implementation. Shifts in mindsets were perceived in that islands became **interested in gaining "good reputation"** by implementing solar PV: RE deployment was reconceptualized as a symbol of progress, with potential to trigger economic development (by projecting an image of modernity towards tourists). In residential islands and atolls, there was also an attempt to provide visible local co-benefits of Solar PV installation, by means of using panels as roofs for new community centers.

Relationship to TMAs

Theory of change incorporated a holistic approach to energy, instead of focusing exclusively on RE.

Economic analysis had the power to enhance the project's perceived relevance through powerful data, addressed detractors.

Feasibility studies were able to articulate problems, link them to broader items in the policy agenda, and generate forceful messages for decision-making.

Stakeholder engagement led to tailored implementation designs that boosted local acceptance of the initiative and contributed to shifting mindsets.

Design takeaways

The **ability to strategically target low carbon development as a key country priority** was made possible by a systems' design that allowed a space for conventional practices and technologies in improved performance conditions. This concession can be strategically used to phase-in alternatives that would have otherwise been neglected.

Buy-in from government and **a shift in local mindsets** derived from simple yet robust evidence made possible through pilot implementations, using designs that are sensible to immediate interests from local communities.

[1]Attempts to introduce RE in combination with diesel faced equipment with an overcapacity challenge. Implementation of RE further decreased diesel efficiency, since by putting in solar PV panels, the diesel generator set load went down, causing a drop in the efficiency, which resulted in a higher use of diesel. This experience raised skepticism around the benefits of RE. Also, a wind energy project 12-15 years ago, consisted of a grant for private sector support for wind energy development. Wind turbines were installed but lacked the arrangements for their correct implementation. Additionally, noise complaints reflected poor acceptance in neighboring communities. This project obtained a widespread perspective of failure inside the country. The lack of feed-in tariffs and purchase agreements at the time played an important role in the development of these projects. In this sense, the support given to improvements in policy and regulation through the Programmatic Approach was also an important component of POISED.

PREPARING OUTER ISLANDS FOR SUSTAINABLE ENERGY DEVELOPMENT

ADB | MALDIVES | SREP

	Transformational Design Features	Relationship to TMAs	Design takeaways
3	**Challenges or opportunities.** The physical dispersion, low population density, and diversity of 160 inhabited Outer Islands made it challenging to introduce tailored RE solutions in Maldives. In the past, the consequence had been a tendency to only address RE potential in the greater Malé Atoll (administrative capital), which holds little resemblance to the majority of islands in the country (e.g. dense and highly connected). Therefore, despite the fact there was a strong rationale to introduce RE sources in Outer Islands– due mainly to the high costs of transporting diesel–, there were no concrete and relatable examples that demonstrated the RE system's performance under local conditions such as the ones they experienced. **Transformative design towards scale.** A pilot program was developed, based on a sample of outer locations that could represent the diversity of islands in terms of size, and also in terms of the different stages and capacities in their transition from diesel to renewable energy sources. Three typologies were created, and a pilot was applied on five islands in order to demonstrate the potential benefits of these systems. The types of challenges, needs, and outcomes resulting from these pilots and their respective typologies, were **demonstrative** for the rest of the islands to understand the implications of RE deployment (costs and time to implement, expected benefits, etc.); this lowered perceptions of risk, resistance to change, and has created an appetite for RE.	**Feasibility studies** used typologies that provided additional potential markets with broad estimates about the feasibility and likely impacts of applying RE solutions themselves. This endowed the project with an inherent ability to scale by means of demonstration. "When we did the pilot phase, we took islands of very different characteristics, small, medium, large islands, city islands, and from that analysis we found financial benefits [they could relate to]." - Abdulla Nashith, Director Green Energy FENAKA	The **ability to create an appetite for implementation despite the heterogeneity of local conditions**, was achieved through an effort to find a balance between broad market characterizations (which may lack sufficient granularity to make a compelling case for the local adequacy of a solution), and highly specialized assessments (which maybe expensive to perform and limit replicability).
4	**Challenges or opportunities.** Lack of local capacities has led to difficulties in ensuring the correct operation of RE systems. Training of local island technicians, developed by the implementation agency and the contractor, are deemed insufficient and could compromise the sustainability of POISED. **Design barrier.** In Maldives, this challenge is yet to be addressed. Stakeholders at FENAKA and MEE pointed towards the desirability of changing the tendering process in order to strengthen contracting procedures in first-of-a-kind projects. These are often packed with uncertainties and knowledge gaps, which were difficult to account for in bidding requirements and contracting terms. Current policies require that the lowest bid fulfilling minimum technical requirements is selected. Stakeholders consider that these factors gave way to the selection of a firm that was overly focused on minimizing costs, lacking a vision for scaling the solution and ensuring its long-term sustainability. For example, contractors were perceived as not sufficiently engaged with local technicians during capacity-building efforts and not responsive enough to technical difficulties during implementation (e.g. the evaluation team was able to observe that some of the equipment was set in Chinese language, and local island operators did not know how to adjust these settings).	Stakeholders suggested the tendering processes leading to the selection of contractors, should have promoted commitment to provide on-site support for O&M, as well as meaningful local capacity building. This may be related to the private sector mapping in a **Market Analysis**. and the need to incorporate **Risk Management** and training activities provisions into the budget and terms for initial contracts.	In demonstrating first-of-a-kind projects, the selection of high-value contracting proposals may be justified: uncertainty, trial-and-error, and local capacity building should be accounted for in expected operating costs. Therefore, bidding and contracting processes may need to internalize first-mover implementation risks. This can help ensure appropriate O&M, follow-up, and dedicated training are contemplated and provided for particularly in projects with demonstration potential.

Key Tools, Methods and Approaches (TMAs)

1. Feasibility Studies (technical)	Diligence Reports of Sample Islands Summary. Energia Effergy. (2014). Hybrid Energy System Feasibility Study for Goidhoo Island.
2. Environmental Management Plan	Ministry of the Environment and Energy of the Republic of the Maldives; ADB. (2014). Environmental Assessment and Review Framework.
3.Economic Analysis	Ministry of Environment and Energy. (2017). Cost Benefit Analysis of Solar PV System in Maldives: A Case Study of Kurendhoo Island.Malé, Maldives.
4. Investment Plan	Climate Investment Funds. (2012). Investment Plan for Maldives.
5. Feasibility Study	ADB. (2014). Project Administration Manual.

SELF-SUPPLY RENEWABLE ENERGY GUARANTEE PROGRAM

IDB | HONDURAS | SREP

Program Description

The *Honduran Self-Supply Renewable Energy Guarantee Program* aims at overcoming technical and financial barriers for the private sector to adopt renewable energy (RE) projects in Honduras.

The Program has two components: a grant used to finance feasibility studies for companies with potential interest in RE; and a guarantee for projects interested in accessing a loan to implement RE.

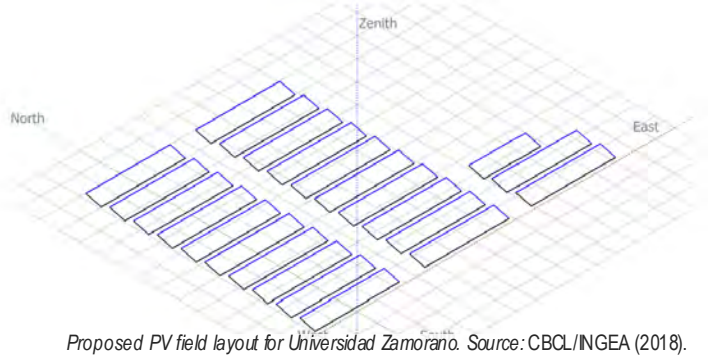
The Program has focused mainly on photovoltaic (PV) energy; nonetheless, biogas, biomass, wind and batteries have also been included in feasibility studies.

Role of the Climate Investment Funds (CIF)

The Program includes two financial components from the Scaling up Renewable Energy Program in Low Income Countries (SREP): a US$ 500,000 grant, used to offer technical assistance (in the form of feasibility studies), and US$ 5 million in guarantee resources, to support projects seeking loans from IDB Group or other financial institutions.

Current Status

The Program was approved in April 2015, with an expected term of four years; a six-month extension was recently approved in order to include additional projects. Up to this point, 33.5% of the grant and 25% of the guarantee resources have been utilized.



Proposed PV field layout for Universidad Zamorano. Source: CBCL/INGEA (2018). *Renewable Energy and Micro Grid Study for EAP Zamorano*. Canada.

"We understood the general aspects of photovoltaic energy, but not the technical aspects. Consultants came to analyze our potential for RE and demand and came up with a proposal that we then took to suppliers so we could compare different alternatives."

– Mauricio Kattan, Kattan Group

Key Indicators

Indicator	Target	Achieved[a]
Increased RE generation capacity and supply (MW)	20	5
Annual electricity output from renewable energy (MWh)	45,000	6,600
Tons of CO_2 emissions avoided per year	40,000	4,430
Number of RE technologies/applications demonstrated	3	1

Note: all baselines are zero. Furthermore, no results have been obtained up to this point.
[a] Targeted and Achieved works accountings are based on the year 2019.

Financing[b]

SREP, Grant	US$ 500,000
SREP, Guarantee	US$ 5 million
IDB-IDB Invest, Loan	US$ 20 million
Private sector, equity or corporate debt	US$ 20 million

[b] Amounts are aspirational, and disbursed according to demand.

Design Features with Transformational Change (TrC) Potential

Systemic Change

By generating local evidence and supporting the implementation of a wave of RE projects, the Program successfully **battled skepticism within the private sector** regarding RE's commercial viability in the Honduran market. This was a necessary first step within a larger process to mainstream RE self-supply models.

Scale

Although so far limited in its actual ability to scale, the project seems to support it by **focusing in sectors with high replication potential** (industrial parks) and in **organizations that serve to nurture knowledge creation and dissemination** (universities).

SELF-SUPPLY RENEWABLE ENERGY GUARANTEE PROGRAM

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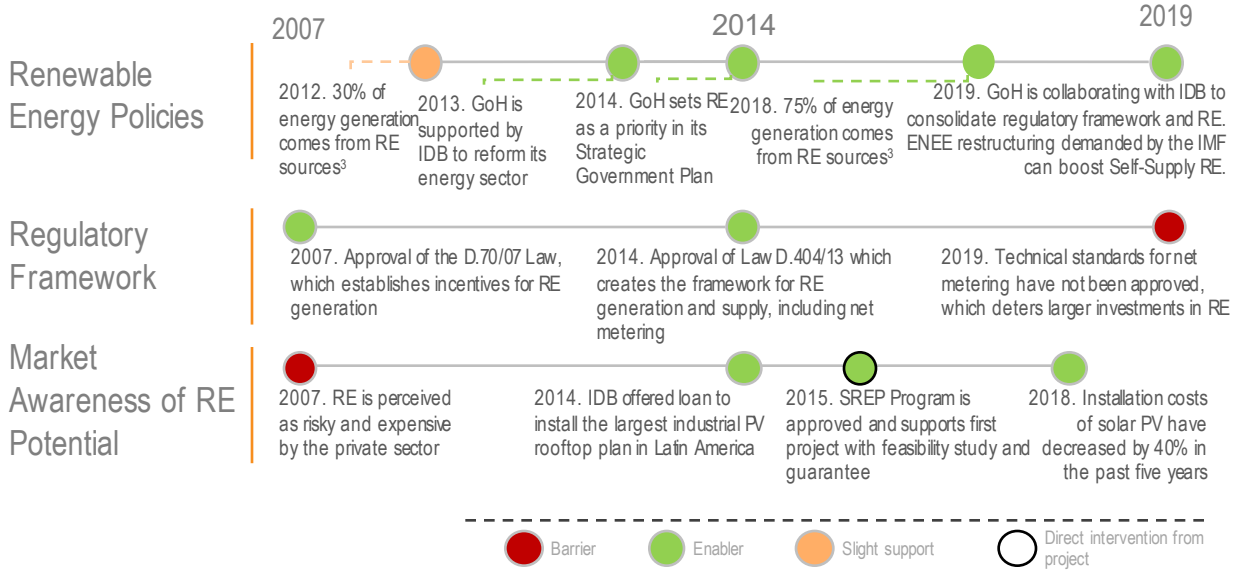
Timeline of Coevolutionary Processes

Since back in 2007, the Government of Honduras (GoH) has been spearheading a shift towards the adoption of renewable energy in Central America. With support from IDB and other international institutions, the GoH has approved laws that incentivize RE investments, and created supporting institutional and legal arrangements. Some of these laws are lacking the technical standards and regulations necessary to implement them (e.g. a net metering regulation), but the national context, in tandem with a decreasing cost of RE technologies, creates a promising ecosystem for private investments in RE.

The *Honduran Self-Supply Renewable Energy Guarantee Program* fits into this national strategy as an intervention focused on overcoming barriers limiting private sector investment, to have a demonstrative potential and catalyse a wider range of RE projects.



[3] Banco Central de Honduras, quoted in Meirovich, Hilen; Parra, Christian (2018). "Energía solar: La revolución que impulsa el desarrollo de Honduras". Washington D.C., USA: IDB

Lessons of Design

Transformational Design Features

1 **Challenges or opportunities.** The Program aimed at financing the first wave of renewables (RE) for self-supply in Honduras' private sector. The technology was available at competitive prices, but access to finance was limited.

Transformative solution towards systemic change. As part of a larger programmatic strategy to scale up RE, the Program's initial focus was to improve the credit profile of RE projects, as a way to broaden RE access to finance. However, after early consultations with the local business community, it became clear that a first necessary step would be to **shift mindsets**: the private sector had little appetite for RE to begin with. Lack of precedents added to perceptions of uncertainty around RE projects; investors required proof of commercial viability, preferably through direct experience. The Program responded by adopting an institutional arrangement to provide interested ventures with an on-site verification of project viability, free of commitments to subsequently acquire a loan. This served to: address knowledge gaps that were distorting perceptions of risk; build evidence of potential benefits; trigger a demonstrative effect to create an appetite for RE, and develop local competencies in RE finance.

Relationship to TMAs

Building on previous experiences in Honduras, the project tapped into local expertise through **stakeholder engagement** early on. This allowed the project's design to be mindful of challenges and perceptions relevant to this context, and use this information to shape site-specific **feasibility studies** as a precondition to stimulate RE in the Honduran market.

Design takeaways

The ability to **successfully battle skepticism within the private sector** was made possible by providing proof-of-concept studies, risk-free and with no strings attached. Particularly in small markets, such evidence can have a catalyzing effect.

In turn, this was the response to an adjusted program rationale, which acknowledged the need to first generate a market for RE, before embarking on mainstreaming efforts.

SELF-SUPPLY RENEWABLE ENERGY GUARANTEE PROGRAM

IDB | HONDURAS | SREP

	Transformational Design Features	Relationship to TMAs	Design takeaways
2	**Challenges or opportunities.** The needs, interests, limitations and financial resources of companies that could implement RE projects in Honduras varied significantly, so a one-size-fits-all solution could limit the Program's ability to attract potential beneficiaries. **Design barrier for scale and sustainability.** The Program had mixed results in tackling this challenge. On the one hand, it was adequate in that it used technical assistance to carry out feasibility studies on a project-by-project basis, which ensured that results were directly applicable to the interested partner. This allowed companies to build relatable evidence that made them more certain and comfortable about deciding on RE as a source of energy. On the other hand, those familiar with the Program opine it had certain limitations, which may have compromised its capacity to adapt to the varying profiles of the Honduran market: 1) Due to market demand, feasibility studies have been focused on RE, and overlooked energy efficiency (EE) elements that could be included to offer more attractive returns on investments, thus further advancing the CIF's low carbon agenda. 2) Project support has focused on medium-to-large size projects within the Honduran market (usually around USD $4 million), because smaller projects – which represent a significant portion of potential demand– require a third-party PPA approach which has been difficult to consolidate due to the characteristics of the market. 3) By tackling a small, incipient market, the program has required additional on-the-ground efforts by IDB to identify projects with potential and interest in RE, instead of benefiting from the competitive dynamics that larger markets (with larger pools of competitors) tend to offer. In this sense, the limitation of the target market has required a trade-off between business development and the application of the minimum concessionality principle.	**Feasibility studies** were key to develop a tailored RE solution and draw attention towards RE potential. Nonetheless, the Program's capacity to support RE in a scalable manner seemed to be hindered by: a) the underlying assumptions in the **theory of change** to bring about targeted outcomes (such as placing IDB loans in this sector) which could have benefitted from a more robust examination; and b) a **market study** should have provided an early mapping of the *effective market demand* for this type of product, and the consequences of doing such a strong market segmentation.	Through their capacity to de-risk investments by demonstrating the potential benefits of particular projects, feasibility studies can be a defining factor to push the private sector towards the adoption of RE or low carbon practices in general. Being specific about a Program's scope can help it target key areas pre-identified as promising for low-carbon development. However, if Programs are too narrow (both in terms of the country and subsector they tackle), implementation can face challenges such as difficulty to scout, validate and tap into potential market demand, which can ultimately lead to suboptimal resource allocation.
3	**Challenges or opportunities.** The incipient nature of RE demand in Honduras needed flagship projects capable of attracting other actors to the market. **Transformative solution towards scale.** A previous project by IDB in Honduras demonstrated the economic feasibility of a large investment in rooftop solar power, which paved the way for more defined demonstrations in other areas that could offer **scale** potential. Following this path, the Program's technical assistance targeted an industrial park: a highly **scalable** target both for Honduras and the region, given the manufacturing profile of the economy. Similarly, the Program included a project with a university, which already had a research area focused on RE and could, through this initiative, have multiplying effects on students and professionals interested in further developing RE knowledge and demonstration projects. Both experiences reflect how the Program identified first movers and collaborated with them to strengthen knowledge networks around renewable energy potential.	**Stakeholder engagement**, led by local IDB staff and local consultants, was critical to identify options with high replication potential. Several of the borrowers had already collaborated with IDB in other projects. This previous experience was critical to participate in this Program, thus proving the value of building on previously articulated MDB networks.	The ability to focus in **sectors with high replication potential** (industrial parks) and in **organizations that serve to nurture knowledge creation and dissemination** (universities) can be achieved by effective involvement of local stakeholders at the stage of a market analysis.

SELF-SUPPLY RENEWABLE ENERGY GUARANTEE PROGRAM

IDB | HONDURAS | SREP

Transformational Design Features

4

Challenges or opportunities. Companies with projects large enough to be compatible with IDB Group loan standards tend to have access to other sources of finance, including equity or loans from commercial banks. According to interviewed stakeholders, conditions offered by IDB Group in this case are not very different from commercial banks, but processing takes twice as much time, which makes accessing IDB Group loans less attractive for a time-sensitive private sector.

Design barrier. The Program was strategically divided in two elements: the technical assistance (feasibility studies) on the one hand, and the guarantees to access finance on the other. While companies receiving technical assistance were encouraged to access IDB Group funds to carry out implementation, this was not mandatory. Thus, there was a low entry barrier to the analysis and formulation of RE projects. All projects with RE potential were technically supported, while companies were allowed to use any type of resources at disposal to implement them.

Although a couple of companies have accessed a loan after proving feasibility, a significant amount of projects supported through technical assistance did not access the financial products and guarantees offered by CIF and IDB Group , deciding to use equity or other financial alternatives to implement the projects instead. This was perceived by some stakeholders as a failure, regardless of the fact that the RE projects were fully implemented. The greenhouse gas emissions (GHG) reductions from these projects, enabled indirectly by CIF and IDB Group support for feasibility studies, are not reflected as a project outcome. This has had a negative impact on the perception of the technical assistance component on the Program: on paper, its valuation rests solely on the amount of projects that accessed financial support from CIF and IDB Group, without recognizing its role in reducing perceptions of risk.

Relationship to TMAs

Through a **risk assessment**, the project identified the need to include technical assistance and capacity building elements, which turned out to be critical for the Program's implementation.

However, the indirect outputs of these studies are not accounted for: only projects that accessed IDB Group finance are reflected in indicators: A different **theory of change** would have been useful to identify specific outputs and indicators from each component, evidencing the role that **feasibility studies** have as an independent component.

Design takeaways

Programs can use CIF funds to empower niches through technical assistance, even if these do not necessarily result in a loan. However, it is advisable that this is done in a way that ensures that funds from other sources (e.g. MDBs) are optimally used, in favor of shaping and implementing at scale and under sustainable terms.

For Programs offering both technical assistances and financial support, it may be useful to monitor and report on both activity-outputs, and not only on the outcomes of financial support. This can offer a more accurate picture of the overall achievements of the Program, and help identify how to maximize impact of concessional resources.

Proposed rooftop PV layout for INHDELVA. Source: CBCL (2019). *Technical and Financial Feasibility Study for a Solar PV System . Choloma, Honduras*

Key Tools, Methods and Approaches (TMAs)

TMA	Found in
1. Stakeholder Engagement, theory of change, and risk assessment	IDB (2014). *Honduran Self-Supply Renewable Energy Guarantee Program. IDB Private Sector SREP Proposal for Submission to the SREP Trust-Fund Sub-Committee*. Washington D.C., USA.
2. Feasibility Studies	CBCL (2017). *Estudio de la Viabilidad Técnica y Económica para la Instalación de Plantas Fotovoltaicas en Zip Búfalo, Honduras. Borrador del Reporte Final*. Villanueva, Honduras. CBCL (2018). *Microgrid Feasibility Study for Utila Power Company. Utila, Honduras. Draft Report.* Utila, Honduras. CBCL (2018). *Renewable Energy and Micro Grid Study for EAP Zamorano.* San Antonio de Oriente, Honduras. CBCL (2019). *Proposed rooftop PV layout for INHDELVA.* Choloma, Honduras.
3. Programmatic Approach	Government of Honduras (2011). *SREP Investment Plan for Honduras*. Tegucigalpa, Honduras: CIF.

PROTECTING FORESTS FOR SUSTAINABLE ECOSYSTEM SERVICES

ADB | LAO PDR | FIP

Project Description

Protecting Forests for Sustainable Ecosystem Services (PFSES) is a public sector project that seeks to support readiness to scale-up REDD+ in Lao, building upon work carried out through the Greater Mekong Subregion Biodiversity Conservation Corridors Project (BCC).[1] It includes the following interventions in 17 administrative villages, distributed along selected biodiversity corridors: land use planning, securing access rights, and land tenure and certification; assisted natural regeneration (ANR) and patrolling to reduce illegal logging and the hunting of wildlife; as well as development of alternative agro-forestry & forestry-pasture livelihood systems[2].

[1] A regional initiative led by ADB that began in 2011, and that seeks to enhance transboundary cooperation for preventing and mitigating fragmentation of biodiversity rich landscapes of the Cardamom Mountains and Eastern Plains Dry Forest in Cambodia, Lao PDR and Viet Nam. The PFSES is also complementary to other GIZ, JICA and KfW REDD+ related investments in Lao PDR.
[2] Additional activities include: Payment for Ecosystem Services (PES), development of carbon credits and diversification of forest products and renewable energy; these are yet to be implemented and therefore not assessed in this case study.

Role of the Climate Investment Funds (CIF)

The Forest Investment Program (FIP) supports, through Additional Finance (AF), the scaling up of sustainable forest management activities within the BCC project in 17 villages of the Phouvong and Dakcheung districts, to strengthen implementation capacity.

Current Status

Project activities began in 2017 and among them, land use planning and granting of access rights have been completed; most components, such as patrolling, ANR, and support for improving cash crops are ongoing; others, such as Payment for Ecosystem Services and promotion of optimal livelihoods to reduce pressure on the conservation areas are yet to begin. Initially set to end in March 2019, FIP is in the process of being extended to last until December, 2021.

Poster elaborated to communicate the range of benefits from sustainable forest management in Lao. Source: ADB, 2019.

Key Indicators

Indicators for Implemented Subprojects	Target	Achieved[a]
Expanded forest area under sustainable forest management by capacitated community groups (ha)	4,450[b]	2,428
Assisted Natural Regeneration (ha)	1,500	2,097
Patrolling of land zonings (number of villages)	17	17
Completed land use planning by zonings (number of villages)	17	17
Participation in nurseries with improved varieties for crash crops (number of farmers)	300	100

Note: all baselines for 2014 are zero except for patrolling which had 6 teams in villages. It is too early in the project to report on the net reduction in CO_2 emissions (tons/yr); nonetheless, carbon assessment work began in January 2019, which will refine the baseline by June, and quantification by August 2019.

[a] ADB. 2019. Environmental Monitoring Report, complemented through interviews.

[b] The final target of 4,450 ha was selected in consideration of ADB reports on the capacity of the communities to participate in sustainable forest management activities.

Financing

Strategic Climate Fund	US $12,840,000
Asian Development Bank	US $20,000,000
Government of Lao PDR	US $60,000
Total	US $32,900,000

Design Features with Transformational Change (TrC) Potential

Systemic Change

Communities have been empowered through access to land and their placement at the center of forest safeguarding, making it more likely that resource protection will endure over time. An enlarged sense of responsibility is regarded as conducive to them assuming greater agency over the protection of forest resources for future generations, with early signs of shifting mindsets and community-level decision making.

Scale

Sustainability

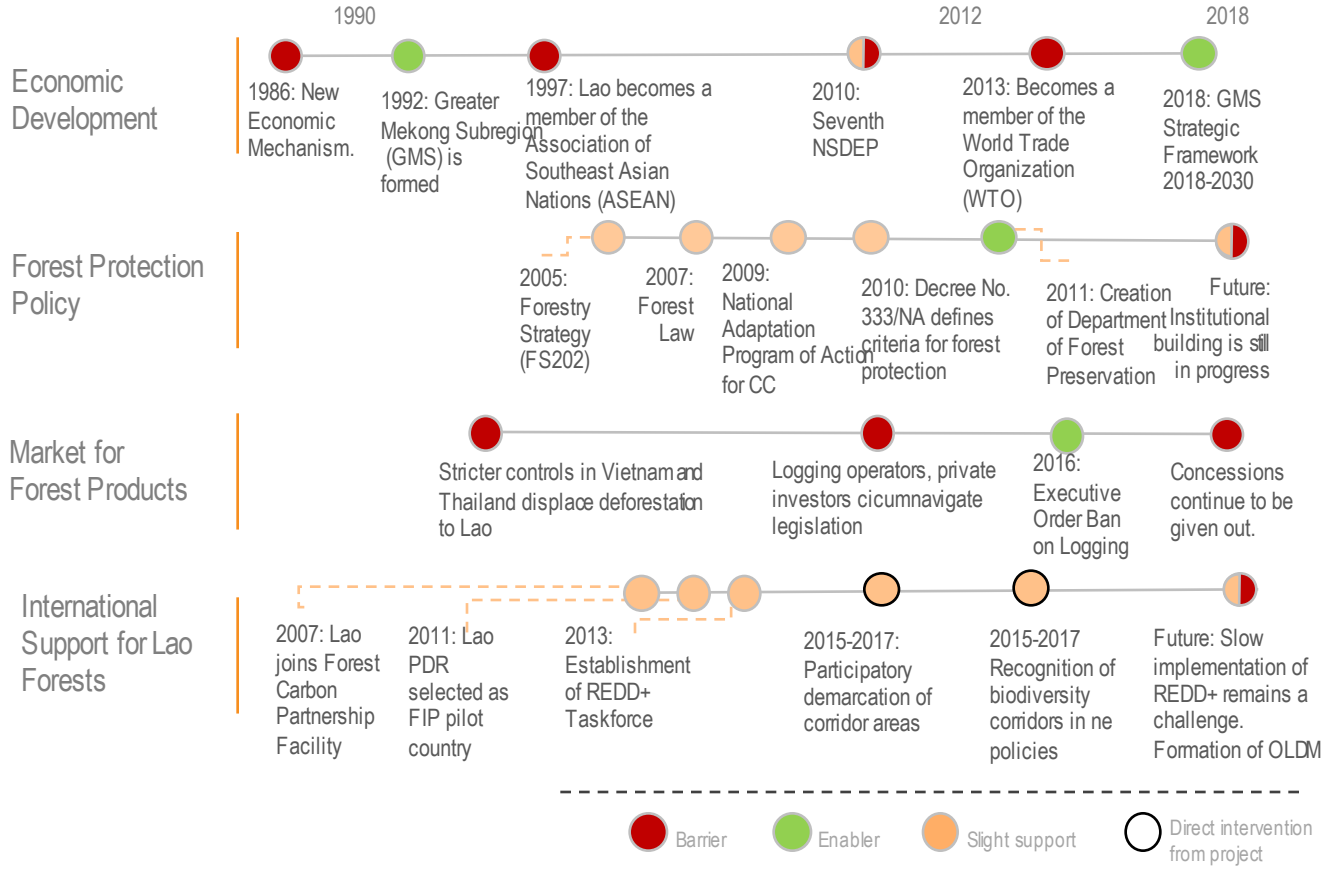
Village forest units for patrolling are regarded as a **low-cost and effective model to further promote enhanced monitoring**, which could be replicated in other locations. The sustainability of the investment is being promoted by making sure these patrol teams are formed by a diverse set of members from community organizations (including the youth), and receiving funds regarded as "allowances from the village" as opposed to wages from government.

PROTECTING FORESTS FOR SUSTAINABLE ECOSYSTEM SERVICES

ADB | LAO PDR | FIP

Timeline of Coevolutionary Processes

As one of the poorest countries in Southeast Asia, Lao's development agenda in the recent decades has focused on economic growth, with an impact on deforestation levels: in 2010, forest cover in Lao reported 40.3%, in comparison to 47.2% in 1992 (Vongvisouk, et.al. 2016). Among these economic drivers of deforestation, two stand out: land conversion for infrastructure (hydropower dams, mining, agri-business expansion) and a response to international demand for rubber, timber, and minerals. Limited capacities - particularly in local government offices, have resulted in unclear, often contradictory legislation (WWF, 2016). Navigating these governance challenges and key market pressures, PFSES has benefitted from positive changes in institutional frameworks such as the creation of the department of Forest Preservation in 2011 and the introduction of a ban on logging in 2016.



Deforestation in Ban Khangkao, Houameuang district. Source: Koch, s. 2017.

"The approach the project is taking is a landscape-scale, the project is covering a large portion of the Southern area of the country. These corridor areas would be adapted, having the potential for scaling up."

- Richard Hackman, PES Consultant

PROTECTING FORESTS FOR SUSTAINABLE ECOSYSTEM SERVICES

ADB | LAO PDR | FIP

Lessons of Design

	Transformational Design Features	Relationship to TMAs	Design Takeaways
1	**Challenges and opportunities**. Villagers in Lao are key partners in the safeguarding of forests – often, they are regarded as the most important of all stakeholders to involve in REDD+ efforts. An imperative reality to acknowledge is that for these villagers, poverty is one of the most acute problems and concerns; for them, "being poor" means to lack labor and having to beg for a living. At the same time, a significant part of deforestation in the country is precisely driven by socio-economic factors such as poverty (among others). Therefore, the provision of labor and improvement of living standards in Villages is raised as a relevant variable to consider in tackling deforestation and forest degradation. **Transformative design towards sustainability and systemic change.** In order to address a key driver of deforestation, the project included support for livelihoods through improvement of cash crops cultivation and agro-business development; while doing so, it also acknowledged a potentially negative externality from this activity, such as the intensification of land use dedicated to farming. As part of the intervention's rationale, project designers placed as a first step participatory land use planning, as a second step guaranteed access to land (a capped amount), and as a third step improved enforcement through patrolling, all which serve to counterbalance the livelihood component of the project. Preliminary results suggest land certification has been empowering for local communities, who will now be able to increase their income through improved cash crops; a more explicit ownership over local resources has endowed them with an enlarged sense of responsibility that positively spillovers towards patrolling activities, reinforcing project outcomes. This logical arrangement among components has thus given incentives to develop appropriation and social commitment, while also placing restraint in the use of local resources; both aspects act in favor of overall sustainability in the project.	A project's **theory of change** can provide detailed causal chains with explicit assumptions to help guide activities and their phasing. Identifying the set of actions that must be set in motion in order to gear different components towards a given outcome, will aid the project in achieving its goals efficiently. This is also conducive to a clearer communication with stakeholders, promoting better understanding and buy-in. Participatory land use planning, the provision of land certificates and the establishment of patrolling teams, as counterbalances to support for agro-based livelihoods, offers an example of how the project can develop appropriate incentives to shift mindsets –at a community level– so villagers can deliver expected benefits and successfully take ownership over the task of safeguarding forests.	The rationale behind **placing villagers at the center of resource ownership and forest safeguarding**, was made possible by the laying out of a clear set of causal chains that mapped key drivers, assumptions, and potentially negative externalities. A systematic and explicit logic model or theory of change can lead to improved design and phasing, by identifying activities that are consistently planned towards and output and ensuring there are checks and balances around key assumptions that could jeopardize the rationale behind a project. This is likely to take interventions closer to conditions that are consistent with expected outcomes.
2	**Challenges and opportunities**. The project has faced delays partly attributable to problems in coordinating the livelihood's component service provider with other project teams. This has resulted in high transaction costs, accounting for 50% overheads to carry out implementation. **Design barrier.** This project is still in the process of addressing the aforementioned challenge. The case illustrates the importance of appropriate arrangements and communication channels among all implementers, for service providers to identify their role within the larger scope of the intervention and follow a clear line of command. Other experiences suggest that overheads may be reduced, and communication optimized by selecting a sole service provider as the core implementer, and adding external expertise as needed.	Implementation arrangements, such as those within **Feasibility Studies**, should optimize coordination among components, making it clear when the complexity of the project or program calls for a dedicated PMO that can make inter-component communication more clear, efficient and less costly. In smaller projects, overheads may be reduced by selecting a sole service-provider with the clear responsibility to coordinate different angles of an intervention and add technical expertise on-demand.	For complex operations, project implementation arrangements must go beyond defining the role of executing agencies and be explicit about the role of service providers as well. It may be worth to consider the allocation of "project management and support resources" to hiring a dedicated PMO, with the specific mandate to expedite processes and give coherence to all components under implementation.

PROTECTING FORESTS FOR SUSTAINABLE ECOSYSTEM SERVICES

ADB | LAO PDR | FIP

Transformational Design Features

3 **Challenges and opportunities**. Studies on the feasibility of a Payment for Ecosystem Services (PES) in Lao had been carried out before, deeming Laotian policy and market environments not mature enough for a successful implementation. For this component to be advanced in a realistic and sustainable way within the context of FIP-AF, the project needed to identify private sector arrangements and law-enforcement conditions to support it.

Design barrier. This challenge is yet to be addressed in an effective way. As with previous attempts to introduce PES, this component faced an environment that did not enable its implementation: lack of proper legislation and of traceable concessionary agreements with hydropower companies make it difficult to effectively adapt the model to the local context. Recent assessments indicate the political will for placing adequate incentives for PES in the Laotian policy framework is yet lacking[5].

The relevance and need for a market approach to make forest management activities sustainable in the long term in Laos is clear. It may be posed that the project could have adjusted its rationale to tackle enabling conditions rather than a direct implementation of PES.

[5] A specific assessment that seeks to draw further lessons for this experience is in process of being completed (mid 2019).

Relationship to TMAs

The **theory of change** lacked explicit assumptions about the market or policy readiness for PES, possibly causing the project to place insufficient emphasis on the enabling conditions needed before advancing to an implementation phase. A more robust **market analysis** could reveal whether the necessary regulatory framework and market conditions were in place for PES.

This example illustrates how an **MLP-based assessment** could be useful in providing project officials with a systematic assessment to identify whether regime and landscape dynamics are supportive or not of a development such as PES. At regime level, barriers and counter-productive dynamics may need to be confronted and phased out before this innovation can break in.

Design Takeaways

Some projects seek transformational change by building on already enabling conditions (they "ride the wave"); others may find their transformational role in the creation of enabling conditions, which may not always result in highly visible transformation but are nonetheless necessary steps.

Climate investments should be clear and upfront (in their rationale or logic model) about the TrC role they aim to play, consistent with the "readiness" there is for their ultimate objective. On this basis, they can keep realistic expectations about the work being done towards achieving transformational change.

Forest village discussions. Source: Koch, S. 2014.

"We have been able to get the communities to move to ANR in a reasonable area. […] Villagers are now patrolling and looking out for that area and reporting issues. We've never seen this before." – *Kevin Smith, Project Implementation Consultant Team Leader*

PROTECTING FORESTS FOR SUSTAINABLE ECOSYSTEM SERVICES

ADB | LAO PDR | FIP

Transformational Design Features	Relationship to TMAs	Design Takeaways
4 **Challenges and opportunities**. Forest protection and surveillance activities in Lao within the BCC project began in 2011, and the FIP AP has been used to enhance them since 2017, by coordinating the communities into patrolling teams, providing blueprints for local regulation and capacity-building. In parallel, technology development for land use monitoring has been advancing worldwide: in 2015, triple-cubesat miniature satellites were introduced to this market, achieving momentous scaling-up by the year 2018[6]. Also in parallel, the government of Lao introduced a ban on logging which is supportive of forest protection enforcement. **Transformative solution towards relevance and systemic change.** FIP-AF has been apt in aligning its activities with a series of transformations happening in the regulatory, governance, and technological arenas of Lao's forestry sector; this seems to be increasing the likelihood of this investment playing a transformational role in the country's efforts to tackle deforestation. In particular, the land use zoning and patrolling components of FIP-AF are activities that have laid groundwork that appear likely to enhance the impact of further innovations/changes related to forest protection and surveillance. As mentioned, a case in point are triple-cubesat miniature satellites, which have been identified by various international donors in Lao as a technology that could multiply the effectiveness of land use monitoring that is already taking place in the context of REDD+. In this sense, BCC and FIP-AF have been timely in their focus on establishing zonings and empowering communities in their enforcement; thanks to the possibility of building upon this work, the deployment of this new technology in targeted communities seems to be more likely to play a catalytic role in enhancing forest monitoring activities. Further linkages are being, with the potential to Further enabling conditions are being promoted through additional regulatory and governance developments. In 2016, the government of Lao established a ban that provides greater legal basis to act upon environmental crimes. Also, stronger linkages for improved monitoring are being promoted through the establishment of an inter-donor Operational Logging and Deforestation Monitoring System. Thus, interventions are showing complementary and reinforcing dynamics towards greater transformations, increasing PFSES' relevance and potential for systemic change.	Effective **stakeholder consultation** with government and partner international donors allowed project designers to insert FIP activities in a highly relevant forest management subsector, where there was opportunity to reinforce ongoing innovations and pressures on established practices and norms.	Relevant project and program design (reflected in concrete activities included in the logic model or theory of change) can be enhanced by MLP-led stakeholder consultation and market assessments. These should be geared towards revealing spaces with catalytic potential due to their alignment with concurrent technological, regulatory, cultural developments.

"At the community level, it's significant [a shift in mindset]. When you go to the farmers, they're quite enthused… Villagers really do want the forest to be there for their children." – *Kevin Smith, Project Implementation Consultant Team Leader*

[6] Planet Labs, a private earth imaging company that designs and manufactures this technology, has launched over 300 min-satellites around the world. They are serving to image the entirety of the planet on a daily basis in order to monitor changes and pinpoint trends.

Key Tools, Methods and Approaches

TMA	Found in
1. Feasibility Study including stakeholder mapping, theory of change, sector, institutional, livelihoods, and economic assessment.	ADB. 2013. Feasibility Study: Amending the scope of the 'Biodiversity Conservation Corridors (BCC) Project in Lao PDR' to accommodate additional financing from the Forest Investment Program (FIP).
2. Stakeholder engagement	Participatory land-use planning and capacity-building activities.
3. Theory of Change, training, institutional and regulatory arrangements.	Law Enforcement and Patrolling Plan 2015-2018 (draft). Department of Forest Resource Management Ministry of Natural Resources And Environment.

FINANCING PROGRAM FOR THE TECHNOLOGICAL TRANSFORMATION OF BOGOTÁ'S INTEGRATED PUBLIC TRANSPORTATION SYSTEM

IDB | Colombia | CTF

Program Description

This public Clean Technology Fund (CTF) Program aimed at financing the procurement of a pilot fleet of clean technology vehicles for the Integrated Public Transport System (SITP) in Bogotá.

CTF funds were loaned to Bancóldex, who acted as the source of finance for local finance institutions (LFI) in charge of offering the loans directly to SITP concessionaires. Bancóldex and the LFIs co-finance each one of the vehicles in equal parts. The loans are offered to concessionaires under attractive financial conditions, which contributes to compensate the upfront price difference of clean technology vehicles vis-à-vis conventional buses.

Role of the Climate Investment Funds (CIF)

Through the CTF, the CIF offered a US $40 million concessional loan, which due to the co-financing mechanism was expected to leverage an additional US $40 million investment from LFIs.

Current Status

Bancóldex utilized $18.6M of the $40M of CTF resources to finance 180 hybrid buses. In addition, 157 hybrid buses were purchased without CTF resources, as a direct consequence of program implementation.[1]
The program was closed in December 2018.

Transmilenio Unit. Photo by Alcaldía Mayor de Bogotá, 2014

Key Indicators

Indicator[a]	Baseline	Target
Number of clean technology buses financed through the Program	0	282
Operating costs (US$)	472,885,250	439,752,215
Local Pollution (particulate matter, tons/year)	360.26	144.71
GHG emissions (CO_2, tons/year)	528,773	470,662
Number of people with daily access to low-carbon public transportation	807,242	2,046,229

[a] Baseline 2013 considers costs and emissions of 460 conventional buses; Target 2017 considers costs and emissions of 282 clean technology buses (1.6:1 replacement factor).

Financing

CTF, loan	US$40 million
LFI, matching loan	US$40 million

Design Features with Transformational Change (TrC) Potential

Systemic Change

A previous and wider transformational change in the public transit in Bogotá (SITP) gave local officials the attribution to define criteria for vehicle operation. By seizing this opportunity, this Program successfully advocated in favor of low-carbon technology procurement, further advancing an angle of systemic change. It did so through the creation of a mechanism that **enabled a type of finance for clean buses that was not available before and** paired it with the use of new local government faculties, enabling a **shift in decision-making towards hybrids** as a valid and viable option. The dissemination of **evidence-based potential benefits from clean technologies** further facilitated a change in mindsets from end users.

Scale

This Program offered a proof-of-concept for the adoption of clean technologies at a right time when market prices allowed hybrid buses to be financially competitive with conventional technology. **As a first step in this direction, the demonstration potential** of this investment facilitated the procurement of 157 additional clean buses in Bogotá without support from IDB Group.

[1] These buses constitute today the largest fleet of hybrid buses in Latin America. The program could not execute the remaining resources due to a combination of factors, including the devaluation of the peso, the financial situation of the concessionaires, the over-exposure of the Colombian financial sector to the urban transport sector, and the lack of a specific quota for clean buses in the tenders issued by *Transmilenio*.

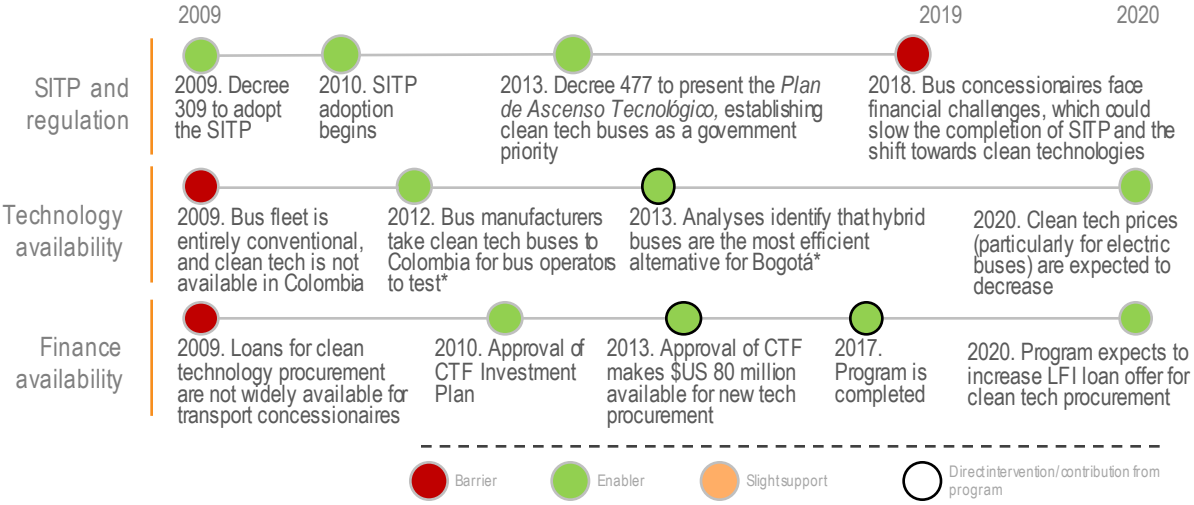
FINANCING PROGRAM FOR THE TECHNOLOGICAL TRANSFORMATION OF BOGOTÁ'S INTEGRATED PUBLIC TRANSPORTATION SYSTEM

IDB| Colombia | CTF

Timeline of Coevolutionary Processes

This Program piggybacked on a major initiative to reform Bogotá's transportation system: the adoption of the Integrated Public Transport System (SITP). The SITP introduced significant changes, such as bringing all transport fares into a unified payment system and substituting the individual operating license model for one based on zonal concessions to transportation service companies. As part of reform, the SITP required buses older than 12 years to be removed from the fleet, which created a demand for new vehicles. Also, it allowed the mayorship of Bogotá (MoB) to define the characteristics that buses for each route should comply with. These factors created a window of opportunity which the Program seized to propel a shift towards low-carbon transport technologies.

In addition to the SITP adoption, two other factors laid the groundwork for the Program: 1) the approval of the *Plan de Ascenso Tecnológico,* through which the MoB set clean technology buses as a political priority, and 2) the implementation of a regional study (financed by IDB) to evaluate environmental performance and financial feasibility of electric and hybrid buses in four cities in Latin America – one of which was Bogotá.



* These events occur during the realization of the study *Hybrid - Electric Bus Test Program in Latin America, carried out by C40, ISSRC and the Clinton Climate Initiative, with financial support from IDB.*

Lessons of Design

Transformational Design Features

1 **Challenges or opportunities.** There was a lack of incentives for traditional transport service providers to switch to low carbon technologies. Perceived benefits for the service providers were not attractive enough to trigger a spontaneous vehicle substitution, and no external factors limited the use of their conventional vehicles.

Transformative solution towards systemic change. The Program piggybacked on a major transformation of Bogotá's public transport system: the creation of the *Integrated Public Transport System* (SITP). Among other changes, SITP gave the local government the attribution to define how many buses and what type of technology would operate in each area. This element was seized by the Program to further modify the system configuration and advance the procurement of clean technologies. Working with local officials, it designed mechanisms to pilot hybrid technologies. This **shift in the consideration of alternatives and decision-making** resulted in the effective piloting of these technologies to demonstrate their viability and benefits.

Relationship to TMAs

Through the **Programmatic Approach** -expressed in the CTF Investment Plan- the Government of Colombia utilized its know-how of national and local policies, stakeholders and government plans to identify and seize a window of opportunity to incentivize clean technologies.

Design takeaways

The capacity to **shift decision-making towards low-carbon alternatives as a valid and viable part of the system**, was tied to the Program's capacity to identify (within ongoing transformations) opportunities to introduce further reform, and to leverage ongoing relationships with key stakeholders involved in making the change possible.

FINANCING PROGRAM FOR THE TECHNOLOGICAL TRANSFORMATION OF BOGOTÁ'S INTEGRATED PUBLIC TRANSPORTATION SYSTEM

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Transformational Design Features	Relationship to TMAs	Design Takeaways
2 **Challenges and opportunities.** Transit operators, and to some degree government officials, were uncertain about the adequacy of the clean technologies being proposed. There were no studies that demonstrated the GHG emissions reduction potential of these technologies in Latin American cities, and operators had doubts about whether the technologies would be capable of meeting their needs – and of doing so in a cost-efficient way. **Transformative solution towards systemic change.** The Investment Plan identified possible stakeholder resistance towards the adoption of clean technologies and conceived two main mitigation measures: a) the use of a feasibility study to gather data; and b) an early engagement with stakeholders, to understand concerns and ease mindset shifts towards technology adoption. IDB supported an environmental feasibility study (carried out by C40, in collaboration with the Clinton Climate Initiative and ISSRC) to test the potential of clean technology buses for GHG emissions reduction. The study assessed environmental impact on site and did so by involving bus operators in the process, as a way to increase their familiarity with clean technologies. Operators were able to experience the technologies in their city, see their implementation in other countries, and meet with bus manufacturers to identify business opportunities. Additionally, cost-benefit analyses were carried out to demonstrate financial feasibility of investments, and overall economic benefits for operators and local governments. Data and participatory activities worked hand in hand to generate **systemic changes** in mindsets towards clean technologies.	A **Risk Assessment** identified early on the need for certainty in potential benefits and an early stakeholder engagement. In consequence, a **Feasibility Study** to demonstrate true GHG reduction potential within mayor Latin American cities (including Bogotá) was critical to verify the relevance of the program. Accompanied by **economic (cost-benefit) analysis**, all necessary data to support environmental and economic benefits was obtained. **Stakeholder Engagement** in the studies and tests also helped overcome mindset barriers early on.	**Evidence-based potential benefits** from low carbon technology adoption was made possible through on-site testing and measurement. This direct experience under local conditions proved to be an effective way to mitigate the risk of financing low-return solutions, and built credibility around an unfamiliar innovation. Identifying risks at Investment Plan level allows stakeholders to identify necessary support useful to engage possible detractors. "The project generated confidence in new technologies. Before, [bus operators] only used diesel-based vehicles with undesirable performance and environmental standards." – Carlos Mojica, IDB
3 **Challenges and opportunities.** Concessionaire companies were largely created by previous bus operators in the process of adapting to the SITP. Acquiring clean technologies required significant upfront investments; a lack of credit history posed a barrier towards access to finance from commercial banks. **Transformative solution towards systemic change.** CTF funds were channeled to commercial banks through Bancóldex, and commercial banks offered the loans to the end users (concessionaire companies). CTF funds could be used to fund up to 50% of the final loan offered to the end users, so commercial banks wanting to access the concessional finance had to match the amount of resources offered by the CTF. The concessional finance offered by CTF benefited commercial banks through lower interest rates and risk sharing. As a result, the program effectively doubled the amount of resources available to end users and addressed a **systemic barrier** by opening commercial banks to financing clean technology procurements.	A **Market Analysis** of the financial sector was carried out to identify **general characteristics and trends of local financing agencies**. Stakeholder Consultations, brought to the table key players in the market, who expressed their concerns and opened spaces to find ways to address them. allowed IDB to identify and straightforwardly address issues limiting credit offering by commercial banks.	The creation of a mechanism that **enables a type of finance for clean buses that was not available before** was possible through a clear articulation of the main market barrier for this carbon solution. Market Analyses paired up with Stakeholder Consultations, can often go beyond a mere assessment, and become powerful vehicles to create networks that articulate problems and solutions.

FINANCING PROGRAM FOR THE TECHNOLOGICAL TRANSFORMATION OF BOGOTÁ'S INTEGRATED PUBLIC TRANSPORTATION SYSTEM

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Transformational Design Features	Relationship to TMAs	Design Takeaways
4 **Challenges and opportunities.** High prices of clean technologies and Government's financial constraints made widespread adoption of hybrid-electric vehicles in Bogotá to be seen as off the table from the start. Also, transport concessionaires had well-established, stable practices with standard diesel buses; even if financial aspects were provided for, transitioning towards clean technologies faced resistance to change. **Transformative solution towards scale.** Through a risk assessment carried out at the Investment Plan phase, the financial inability to shift the entire transport system towards clean technologies was identified early on. Possible resistance from transport operators also emerged as a challenge. In order to tackle the latter and start setting the ground for future, systemic transformations, the program embraced its own role as an initial stepping stone towards the objective of demonstrating that cleaner technologies were capable of providing much needed environmental benefits, while still fulfilling the needs of public transportation in Bogotá. Thus, the use of **intermediate yet feasible solutions towards deep systemic change**, sought to prepare mindsets for a smooth adoption of clean technologies, once market prices allowed it.	The **Risk Assessment** ensured that expectations were adequately set, as to avoid ill perceptions that could hinder future technological deployment. Also, it allowed to focus the program on one of the transformative impacts that the larger program rationale had to tackle through the **theory of change**: preparing mindsets for deeper and broader technological shifts.	Justifying the value of this Program's **demonstrative effect as a first step for larger transformations**, was made possible by identifying risks early on and using them to ground expectations about the scale of the expected outcome. This protected the credibility of the investment and allowed to strengthen risky areas in order to set a good precedent. Project rationales about transformative impacts that go beyond the reach of a single project and embrace reasonable hypotheses of future market shifts (in this case, technology prices) can help governments and project leads to break down complex transformations, and incrementally start setting the ground for further and deeper change.

Key Tools, Methods and Approaches (TMAs)

TMA	Found in
1. Stakeholder Engagement	ISSRC-IDB-C40-Clinton Climate Initiative (2013). *Hybrid - Electric Bus Test Program in Latin America. Final Report.* California, USA.
2. Feasibility Study	ISSRC-IDB-C40-Clinton Climate Initiative (2013). *Hybrid - Electric Bus Test Program in Latin America. Final Report.* California, USA.
3. Risk assessment	IDB (2013). *Loan Proposal*. Washington D.C., USA.
4. Logic Model	IDB (2013). *Loan Proposal*. Washington D.C., USA.
5. Cost Benefit Analysis	BASE-IDB (May 2013). *Análisis Económico para el financiamiento de autobuses Híbridos y Eléctricos en el marco del "Sistema Integrado de Transporte" de la ciudad de Bogotá.* Washington D.C., USA.
6. Cost Benefit Analysis	Universidad de los Andes (Feb 2013). *Cost-Benefit Analysis of the Funding Program for the Technological Transformation of the Integrated Public Transportation System (SITP) of Bogotá CO-L1096 and Potential Greenhouse Gas (GHG) Emissions Reduction.* Bogotá, Colombia.


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